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## ABSTRACT

This proceedings volume from the Pacific Telecommunications Council Mid-Year Seminar includes the following presentations: "Platform and Equipment for Access Network" (Yukou Mochida); "Integrated Services Television: Digital Age TV with a Built-in Home Server" (Tatsuhito Nagaya); "Future of the Internet: Future of Telecommunications" (Anthony M. Rutkowski); "NTT's Overseas Business Strategy" (Noboru Miyawaki); "KDD's Future Strategy, Clicking on the Asia-Pacific Region" (Tohru Ohta); "Wireless Communications in Korea: The New Strategy under Competition and Open-Door Policy" (SK Telecom); "U.S. User Requirements and Industry Implications" (Lee A. Daniels); "Requests to Telecom Carriers" (Toyota Motor Corporation); "Network System in Banking Industry;" "Platform and Equipment for Multimedia Network and Its Applications" (Eiichi Yoshikawa); "Network Services in Multimedia Era" (Toru Adachi); "Viewer's Service Integration;" "The Global Network Society: Business Opportunities and Challenges: New Applications in an Era of Convergence" (Karl K. Rossiter); "What Does Internet Bring to Schools?" (Hiroshi Nakagawa); "The Business and Law of Web Commerce" (George E. Darby); and "Towards the New Age of Digital Economy: Development of Electronic Commerce and a Policy Framework" (Hisashi Yoshikawa). The seminar program and list of attendees are included. (SWC)

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# Collection of Presentations

## PTC 1997 Mid Year Seminar Yokohama, Japan June 3-4, 1997

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# **Agenda**

## **PTC 1997 Mid Year Seminar**

**Softopia Japan Projects**

**by**

**Takatoshi Ando,**  
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[ando@softopia.pref.gifu.jp](mailto:ando@softopia.pref.gifu.jp)

*Contents:*

**I. Regional Administration Strategy for a Globally Networked Society in the 21<sup>st</sup> Century.**

**II Establishment of an Information Oriented Center and Creation of New Business Opportunities.**

• Basic concepts of the projects:

- (1) Evaluation of "Information Center for Production of Information Values (Joh-Joh)"
  - Farming in an agricultural society → Production in an industrial society →
  - Joh-Joh in the Information Society

*Integration of Man, Intelligence, and Information.*

- (2) Hub base in support of a Regional Information Oriented Society:
  - Information Oriented Driving Force in Quality of Life, Welfare, and Education.
  - Medicine, Culture, etc. in building an Information Oriented Society.
- (3) Advanced Research & Development base for software:
  - Creation of an Information Oriented Industrial Park.
  - Creation of New Business Opportunities in Multimedia and Network Business.
  - Promotion of Information Orientation for Local Traditional Industries.
- (4) Development of a 21st Century Information Oriented City and of a Core Center:
  - Creation of a Inland Media Port.
  - New point of view in Public Investment.
  - Global Information focused Hub City.
- (5) Core Center for Global Complex:
  - Expanding a borderless structure via the Internet.
  - Expansion of Overseas Tactics.

**II. Four Primary Functions and Active Projects of Expansion:**

- (1) Talent Cultivation and Education Training in raising an Information Society.
  - Establishment of the International Academy of Media Arts and Sciences.
    - Founded April 1, 1996 (Cultivation and Education Training of Multimedia).
    - Creator: Boundary between Science and Art.
  - Cooperation with Educational Organizations such as Universities.
  - Talent Cultivation and Education Training.
- (2) Research and Development of High Information Science:
  - Research and Development cooperated with Industries, Administrations, and Universities.
  - Research and Development with major Universities abroad.
  - Driving Force of the Picere Project (Information Oriented Promotion for Local Traditional Industries).
  - Establishment of Gifu Prefecture Multimedia Collaborative Research Center.

- (3) Creation of Information Oriented Demand and New Business Opportunities:
  - Driving Force of a 21st Century Information Oriented City.
  - Cultivation and Support of Venture Business.
  - Active Investment in making an Advanced Information Oriented Base.
  - Establishment of Gifu Prefecture Regional Information Oriented Industries.
    - Founded November, 1995
    - 310 Companies
  - Diversified Conference of Information Exchange.
  - Establishment of Gifu Prefecture Information Orientation Consultation Room.
- (4) Expansion of High Information Dispatching Functions:
  - Expansion of Softopia Japan Global concept.
  - Construction of Internet and Softopia LAN.
  - Establishment of Gifu Prefecture Super High Way Society.
  - Establishment of Softopia Japan Information Library and Media Plaza.
  - Organization of Symposium, Events, and Research Societies.
  - Establishment of International Information Society.
  - Establishment of Regional Information Orientation Consultation.

### III. Points of Processing Projects and Subjects for Future Consideration:

- (1) Compatibility, Compliance, and Preciseness in flexibly and efficiently dealing with alterations.
- (2) Driving Force of Digital Evolution and Establishment of a Bilateral Network in Industries, Administrations, and Universities.
- (3) Motivation of Industries for Promotion and Completion of Support Conditions.
- (4) Vivid Contribution in Regional Information Orientation.
- (5) Other Considerations.

# PTC 1997 Mid Year Seminar アンケート

今後の参考のため、アンケートにご協力のうえ、改善要望等フリーコメント欄にお書きください。

PTC :	a. 会員	b. 非会員	[ _____ ]
業種 :	_____		

- (1) セミナーの全体構成について
  - a. よい      b. ふつう      c. 改善が必要(フリーコメント欄へ) [ \_\_\_\_\_ ]
- (2) セミナーの運営全般について
  - a. 満足      b. 不満足      c. 改善が必要(フリーコメント欄へ) [ \_\_\_\_\_ ]
- (3) 会場 (パシフィコ横浜) について
  - a. よい      b. 適当      c. 改善が必要(フリーコメント欄へ) [ \_\_\_\_\_ ]
- (4) 同時通訳について
  - a. よい      b. 適当      c. 改善が必要(フリーコメント欄へ) [ \_\_\_\_\_ ]
- (5) フリーコメント

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ありがとうございました。

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## PTC 1997 Mid Year Seminar Comments Sheet

PTC : a. PTC member      b. non-member [      ]

Type of industry : \_\_\_\_\_

(1) Program of the Seminar

a. good      b. fair      c. poor      [      ]

(2) Operation of the Seminar

a. good      b. fair      c. poor      [      ]

(3) Venue (Pacifico Yokohama)

a. good      b. fair      c. poor      [      ]

(4) Simultaneous interpretation

a. good      b. fair      c. poor      [      ]

(5) Comments

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Thank you.

プログラム	評価	ご意見・ご感想
<b>基調講演</b>		
「グローバル情報社会の発展と政策」 郵政省 大臣官房国際部長 長谷川 憲正氏	良い←-----悪い 1 2 3 4 5	
「グローバル通信ネットワークの将来」 ジェネラル・マジック 副社長 アンソニー・ルトコウスキー氏	良い←-----悪い 1 2 3 4 5	
<b>セッション1 "電気通信インフラストラクチャー"</b>		
「NTTの国際事業戦略」 NTT 副社長 宮脇 隆氏	良い←-----悪い 1 2 3 4 5	
「アジア太平洋地域を中心としたKDDビジネスの将来戦略」 KDD 副社長 太田 亨氏	良い←-----悪い 1 2 3 4 5	
「韓国における無線通信：自由競争時代の新戦略」 SKテレコム 副社長 睦 楨来氏	良い←-----悪い 1 2 3 4 5	
「米国におけるユーザーの要望と産業界の対応」 日本AT&T 社長 リー・ダニエルズ氏	良い←-----悪い 1 2 3 4 5	
「通信事業者に対する要望」 トヨタ自動車 システム企画部副部長 永目 賢助氏	良い←-----悪い 1 2 3 4 5	
「バンキング・ネットワーク・システムの動向と情報通信事業者への期待」 日本興業銀行 システム管理部長 西脇 文男氏	良い←-----悪い 1 2 3 4 5	
<b>セッション2 "プラットフォームと関連機器"</b>		
「マルチメディアネットワークのプラットフォームと関連機器及びその応用」 NEC 常務取締役 吉川 英一氏	良い←-----悪い 1 2 3 4 5	
「アクセスネットワークにおけるプラットフォームと関連機器」 富士通研究所 取締役 持田 侑宏氏	良い←-----悪い 1 2 3 4 5	
「将来の家庭用大型平面ディスプレイ」 NHK放送技術研究所 研究主幹 吉川 重夫氏	良い←-----悪い 1 2 3 4 5	
「ネットワークコンピューティング・プラットフォーム」 日本IBM ネットワークコンピューティング事業推進計画部長 沢田 智明氏	良い←-----悪い 1 2 3 4 5	
「マルチメディア時代のネットワークサービス」 NTT通信網総合研究所 主幹研究員 安達 徹氏	良い←-----悪い 1 2 3 4 5	
<b>セッション3 "コンテンツとアプリケーション"</b>		
「デジタル放送時代におけるISTV」 NHK放送文化研究所 研究主幹 長屋 龍人氏	良い←-----悪い 1 2 3 4 5	
「融合時代の新アプリケーション」 テレビジョン・ニュージーランド カール・ロシータ氏	良い←-----悪い 1 2 3 4 5	
「マルチメディア教育」 横浜市 教育委員会事務局情報教育課 中川 一史氏	良い←-----悪い 1 2 3 4 5	
「ウェブコマース・ビジネスと法的課題」 ジョージ・ダービー法律事務所 ジョージ・ダービー	良い←-----悪い 1 2 3 4 5	
「デジタル経済の時代に向けて」 通産省 機械情報産業局情報政策企画室長 芳川 恒志氏	良い←-----悪い 1 2 3 4 5	
「岐阜県ソフトピア・プロジェクト」 ソフトピアジャパン 副理事長 安藤 隆年氏	良い←-----悪い 1 2 3 4 5	



PROGRAM	EVALUATION	COMMENTS
<b>KEYNOTE SPEECHES</b>		
Norimasa Hasegawa Director-General, International Affairs Department, MPT	good—poor 1 2 3 4 5	
Anthony Rutkowski Vice President, General Magic	good—poor 1 2 3 4 5	
<b>SESSION 1 "Telecommunications Infrastructure"</b>		
Noboru Miyawaki Senior Executive Vice President, NTT	good—poor 1 2 3 4 5	
Tohru Ohta Executive Vice President, KDD	good—poor 1 2 3 4 5	
Jung L. Mok Senior Executive Vice President, SK Telecom	good—poor 1 2 3 4 5	
Lee A. Daniels President and CEO, AT&T Japan	good—poor 1 2 3 4 5	
Kensuke Nagame TOYOTA	good—poor 1 2 3 4 5	
Fumio Nishiwaki General Mgr., Systems Department, IBJ	good—poor 1 2 3 4 5	
<b>SESSION 2 "Platform and Equipment"</b>		
Eiichi Yoshikawa Senior Vice President, NEC	good—poor 1 2 3 4 5	
Yukou Mochida Member of the Board, Fujitsu Laboratories	good—poor 1 2 3 4 5	
Shigeo Yoshikawa Exec. Research Engineer, Science & Technical Research Lab, NHK	good—poor 1 2 3 4 5	
Tomoaki Sawada IBM Japan	good—poor 1 2 3 4 5	
Toru Adachi Director, Telecommunication Network Lab, NTT	good—poor 1 2 3 4 5	
<b>SESSION 3 "Contents and Applications"</b>		
Tatsuhito Nagaya Exec. Researcher, Broadcasting Culture Research Inst., NHK	good—poor 1 2 3 4 5	
Karl Rossiter Television New Zealand	good—poor 1 2 3 4 5	
Hitoshi Nakagawa City of Yokohama	good—poor 1 2 3 4 5	
George E. Darby Law offices of George E. Darby	good—poor 1 2 3 4 5	
Hisashi Yoshikawa Director, MITI	good—poor 1 2 3 4 5	
Takatoshi Ando Vice Chairman, Softopia Japan	good—poor 1 2 3 4 5	

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## 講演者プロフィール \* Speakers' Profile

**横川 日榕** 太平洋電気通信協議会 (PTC) 副理事長

1955 九州大学電気通信工学科卒・日本アイ・ビー・エム株式会社入社/1987 産業技術涉外担当理事/1993 国際情報通信コンサルタント代表取締役

**Hiyoshi Yokogawa** Vice President, Pacific Telecommunications Council

1955 Graduated from Telecommunications Engineering Department, Kyushu University, • Joined IBM Japan Ltd. /1987 Director of Commercial & Industry Relations/1993 President, InfoCom Consultancy International Ltd.

**野田 聖子** 郵政省 郵政政務次官

上智大学外国語学部卒/1987 岐阜県議会議員/1993 衆議院議員

**Seiko Noda** State Secretary for Posts and Telecommunications

Graduated from Faculty of Foreign Studies, Sophia University/1987 First elected to the member, Gifu Prefectural Assembly/1993 First elected to the House of Representatives

**ジェーン・ハード** PTC理事長 Severance International 社社長

1984 米国政府商務省 National Telecommunications and Information Administration 戦略計画部長/1997 世界電気通信開発会議 米国代表/1997 PTC理事長

**Jane Newcomb Hurd** President, Severance International Inc. President of PTC

1984 Director of Strategic Planning in the Office of International Affairs of the NTIA/1994 Distinguished White House Private Sector Representative on U.S. delegation to the World Telecommunications Development Conference/1997- President of PTC

**長谷川 憲正** 郵政省 大臣官房国際部長

1967 東京大学法学部卒・郵政省採用/1983 電気通信政策局国際課長/1990 大臣官房国際課長/1992 大臣官房審議官 /1995から現職

**Norimasa Hasegawa** Director-General, International Affairs Department, Ministry of Posts and Telecommunications

1967 Graduated from Faculty of Law, the University of Tokyo • Entered MPT/1983 Director, International Affairs Division, Telecommunications Policy Bureau/1990 Director, International Policy Coordination Division, Minister's Secretariat/1992 Assistant Vice-Minister/1995- Current Position

**アンソニー・マイケル・ルトコウスキー** ジェネラル・マジック社 副社長

インターネットおよび情報通信の世界で、もっとも著名なリーダー、戦略家/1991 インターネット・ソサエティ財団を共同設立/1994 事務局長/1992 スプリント・インターナショナル社・経営企画グループ・技術評価担当ディレクター/1996 ジェネラル・マジック社

**Anthony Michael Rutkowski** Vice-President of Internet Business Development, General Magic

One of the most visible and well-known global leaders and strategists in the Internet and telecom world today/Named Executive Director of the Internet Society in February 1994 after co-conceiving the Society in 1991/1992 Director of Technology Assessment in the Strategic Planning Group of Sprint International/1996 Joined General Magic

**公文 俊平** 国際大学グローバル・コミュニケーション・センター所長

1957 東京大学経済学部卒/1959 東京大学大学院社会科学部研究科理論経済学専門課程修士課程終了/1967 東京大学教養学部助教授/1968 米国インディアナ大学経済学部大学院終了 Ph. D. 取得/1978 東京大学教養学部教授/1990 国際大学教授/現職/1993 現職

**Shumpei Kumon** Executive Director, Center for Global Communications, International University of Japan

**宮脇 隆** 日本電信電話株式会社 代表取締役副社長 国際本部長、国際本部技術輸出管理室長兼務 マルチメディア推進  
本部長兼務 マルチメディアネットワークサービス事業本部長兼務

1959 北海道大学工学部電気工学科卒・日本電信電話公社入社/1988 取締役 関東総支社長/1992 常務取締  
役 研究開発技術本部長/1996 代表取締役副社長 マルチメディア推進本部長、国際部長兼務/同年12月から現職

**Noboru Miyawaki** Senior Executive Vice President Senior Executive Manager, International Affairs HQ Senior  
Executive Manager, Multimedia Service Promotion HQ Senior Executive Manager, Multimedia Network Service Sector  
1959 B.E. degree in Electric Engineering at Hokkaido University・Joined Nippon Telegraph and Telephone Public  
Corporation/1988 Senior Vice President, General Manager, Kanto Telecommunications Service/1992 Executive Vice  
President, Senior Executive Manager, Research and Development HQ/1996 Senior Executive Vice President, Senior  
Executive Manager, Multimedia Service Promotion HQ, Senior Executive Manager, International Affairs  
Department/December 1996- Current Position

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1962 東京大学工学部卒・国際電信電話株式会社入社/1989 国際部長/1991 取締役ネットワーク開発本部海  
底線部長/1994 常務取締役ネットワーク本部海底線部長/1996 代表取締役副社長

**Tohru Ohta** Executive Vice President, Supervision of Network Headquarters, Kokusai Denshin Denwa Co., Ltd. (KDD)  
1962 B. Eng. the University of Tokyo Joined Kokusai Denshin Denwa Co., Ltd./1989 Director, International Affairs  
Department/1994 Managing Director/1966- Current Position

**睦 植来** SKテレコム 副社長

コロンビア大学にてMBA取得、公認会計士/テハン・テレコム社専務取締役を経て、1997 SKテレコム社副社長兼  
イリディウム・コリア社社長

**Jung L. Mok** Senior Executive Vice President of SK Telecom

Received MBA degree from Columbia University, Certified Public Accountant, Member of the American Institute of  
Certified Public Accountants, New York State Society of Certified Public Accountants/Served as Senior Managing Director  
and COO of Taehan Telecom Limited/1997 Senior Executive Vice President of SK Telecom and President and CEO of Iridium  
Korea, a wholly owned subsidiary of SK Telecom

**リー・ダニエルズ** 日本AT&T 社長

Brigham Young University 卒・上智大学にて修士課程修了/1984 AT&T ロサンゼルス入社/日本勤務は、2度目

**Lee A. Daniels** President of AT&T Japan Limited

Graduated from Brigham Young University with a Bachelor of Science degree/Received Master of Arts degree in  
International Business from Sophia University in Tokyo/Joined AT&T as an Account Executive in Los Angeles/1994 Returned  
to Japan for the second time in his career

**永目 賢助** トヨタ自動車 システム企画部副部長

1969 慶応義塾大学工学部機械学科卒・トヨタ自動車販売株式会社入社/1992 C I S企画部主査/1996 現職

**Kensuke Nagame** System Planning Division, TOYOTA

1969 Graduated from Keio University・Joined TOYOTA/1992 Manager, Communication Information System/1996- Current  
Position

**西脇 文男** 日本興業銀行 システム管理部部長

1968 東京大学経済学部卒・日本興業銀行入社/1993 興銀証券取締役/1995 現職

**Fumio Nishiwaki** General Manager, Systems Department, The Industrial Bank of Japan (IBJ)

1968 Graduated from the University of Tokyo・Joined IBJ/1995- Current Position

**吉川 英一** 日本電気株式会社 常務取締役  
京都大学卒/NECにてソフト開発部門でマネジメント職を歴任/PC-VANとMESHインターネット・サービスのBIGLOBEへの統合を担当

**Eiichi Yoshikawa** Senior Vice President, NEC Corporation  
Graduated from Kyoto University, Department of Electrical Engineering/Held a number of senior management responsibilities in NEC's software development operations/Was responsible for the integration of PC-VAN and MESH Internet service into BIGLOBE Integrated Personal Multimedia Service

**持田 侑宏** 株式会社富士通研究所 取締役兼ネットワークシステム研究所長  
1964 東京大学工学部電気工学科卒・富士通株式会社入社/1965 ミュンヘン工科大学留学/1988 東京大学工学博士・電送事業部部長/1996 現職

**Yukou Mochida** Member of the Board, Fujitsu Laboratories Limited, General Manager of Network Systems Laboratories  
1964 Graduated from the University of Tokyo・Joined Fujitsu Limited/1965 Studied at Munich Institute of Technology/1988 Received Dr. Eng. from the University of Tokyo/1994 Board Member of Fujitsu Laboratories Limited

**吉川 重夫** NHK放送技術研究所 研究主幹  
**Shigeo Yoshikawa** Executive Research Engineer, Science & Technical Research Lab, NHK

**沢田 智明** 日本アイ・ビー・エム株式会社 ネットワーク・コンピューティング計画部長  
**Tomoaki Sawada** Director, Strategy & Plan, Network Computing, IBM Japan Ltd.

**安達 徹** 日本電信電話株式会社 通信網総合研究所 主幹研究員  
1974 東京工業大学工学部理工学研究科電気工学専攻 修士課程修了・日本電信電話公社入社/大規模集積回路の設計自動化技術の研究開発/1995 現職

**Toru Adachi** Director of Strategic Planning and Promotion Project, NTT Telecommunication Network Laboratory Group  
1974 Received Master of Science Degree from The Tokyo Institute of Technology・Joined NTT Electronic Communication Laboratories/Responsible for the development of various kind of computer aided design and testing systems for VLSIs/1995- Current Position

**長屋 龍人** NHK研究主幹  
東京大学大学院社会学研究科修士課程修了/1962 NHK入局/ニュース・報道番組ディレクター/NHKスペシャル番組部チーフ・プロデューサー/NHKシンガポール支局長/衛星放送番組の編成統括エグゼクティブ・プロデューサー/1993 現職

**Tatsuhito Nagaya** Executive Researcher, NHK  
1962 Joined NHK/Director of news and other programs/Chief Producer of Special Programs/NHK Bureau Chief in Singapore/Executive Producer in charge of satellite broadcasting programming section/1992 Received Master's Degree in sociology from the University of Tokyo: Institute of Socio-information and communication studies/1993- Current Position

**カール・ロシータ** ニュージーランドTV ビジネス開発部長  
**Karl K. Rossiter** Business Development Manager, TVNZ Distribution, Television New Zealand Limited  
Specializes in commercial applications appropriate to the new communications technologies

**中川 一史** 横浜市教育委員会 情報教育課

横浜国立大学教育学部卒・教職／横浜国立大学大学院教育学研究科終了／横浜市中川西小学校教諭

**Hitoshi Nakagawa** Education Committee, City of Yokohama

Graduated from Yokohama National University/Tought at Yokohama Nakagawa Nishi Elementary School

**ジョージ・ダービー** ジョージ・ダービー法律事務所、テレポート・アジア社長

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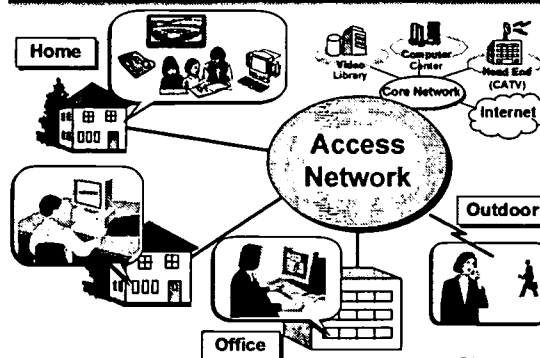
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## Platform and Equipment for Access Network

June, 1997  
FUJITSU LABORATORIES LTD.  
Yukou Mochida

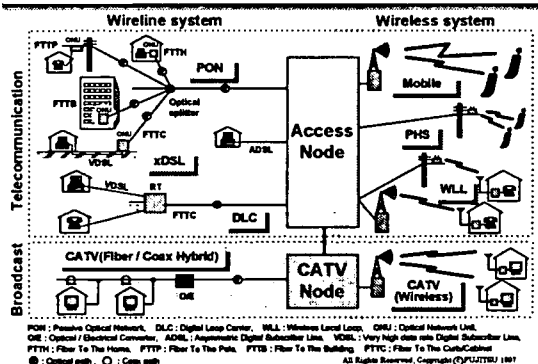
## Access System Brings Multimedia World Fujitsu



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## Access Network

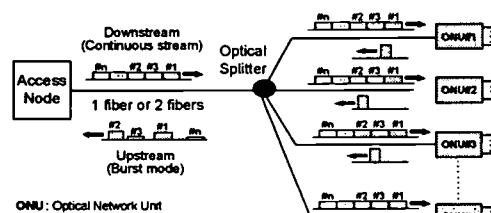
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## PON (Passive Optical Network)

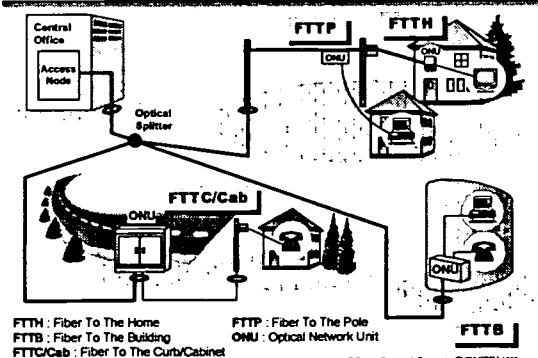
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## PON Based Access Systems

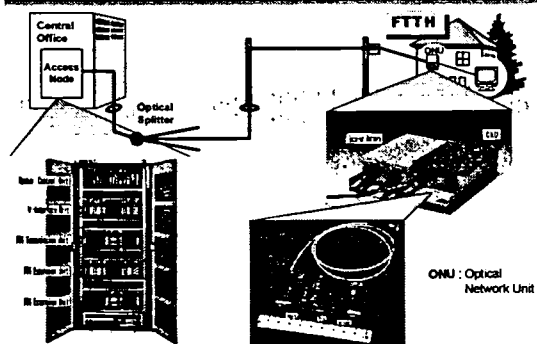
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## Main Equipment and Technology of PON

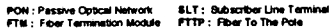
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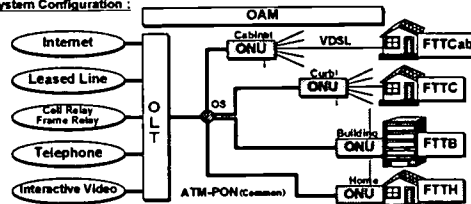


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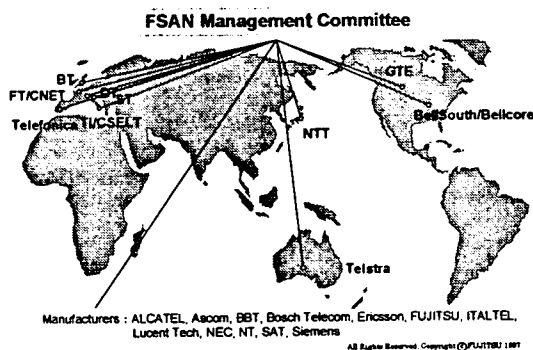
## Fujitsu

**Outline:** Pre-standardization activities of broadband optical access network by World's major operators and vendors [Established in June, 1995]

### System Configuration :



OLT : Optical Line Termination      VDSL : Very high data rate Digital Subscriber Line      OS : Optical Splitter  
ONU : Optical Network Unit      OAM : Operation, Administration and Maintenance      (Source : NTT, Open Network 1000-10)  
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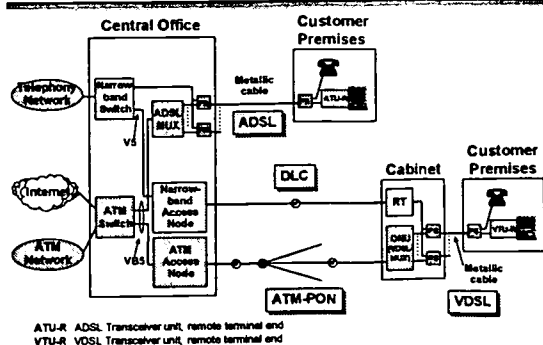
- 

TU-C Transceiver unit, central office and  
TU-R Transceiver unit, remote terminal end

DMT Discrete Multitone  
PS POTS Splitter

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## Fujitsu



ATU-R ADSL Transceiver unit, remote terminal end  
VTU-R VDSL Transceiver unit, remote terminal end

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## Fujitsu

- **Multimedia Communication Platform by Access Systems**
  - PON
  - ADSL/VDSL
  - DLC
- **Economical Equipment by World-wide Commonality**
- **Overcoming Cost Barriers by Technical Breakthroughs**

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# Integrated Services Television: Digital Age TV with a Built-in Home Server

ISTV will open a variety of contents and applications in digital broadcasting.

**Tatsuhito Nagaya,**

*Executive Researcher, NHK Broadcasting Culture Research Institute  
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## Abstract:

Television, one of the greatest inventions of this century, has led to a giant media industry which exerts major influence on society; it is also the most characteristic cultural development of the 20th century. But TV is a passive medium, to be enjoyed by an unspecified number of people. This is sometimes a cause for ridicule. But because of such wide availability, TV has become the leading form of media, used by the largest number of people.

Amid the growing trend toward the use of digital technology, TV tends to be regarded as comparatively dull, because it lacks an interactive system. There is even speculation that the current form of TV will be taken over by PC-related Internet-type TV, through the fusion of broadcasting and communication systems. Is interactive TV really an inevitable step? If so, how is TV to adopt interactivity?

It is, of course, a matter of time until digital technology transcends the barrier of cable and wireless technologies and combines them to give birth to an "ultimate TV" with both individual and interactive functions.

It seems inevitable that the current form of TV will eventually evolve into a visual integrated portable terminal, that is, a receiver capable of a variety of communications involving a personal computer, fax, printer and TV telephone.

The problem is how successfully TV entrepreneurs will be able to cope with the new situation, once the system barriers are removed through the fusion of the digital environment, broadcasting, communications and computing. What services will they be able to provide? In which directions should individual selectivity be expanded and to what extent should it be absorbed?

Detailed study of information activity reveals major differences in the goals, quantity, frequency and quality between the individual, selective type of such activity and the passive, moderate type such as TV-viewing (Figure 1). This means the point is not rivalry between personal computers and TV. Rather, the multimedia-type of TV, evolved from a form meeting mass demand and the PC related individual order-type media, capable of selecting and referring to individual information at any time and as much as possible, must be developed hand in hand for the next generation. However, differences between the two types of information media should not be neglected. To overemphasize individual selectivity and interactivity when developing mass-oriented TV into Internet-type TV, or into a media that simply unifies various functions, undermines human interfacing and is not good for either viewers or TV enterprisers.

This author proposes the idea of Integrated Services TV (ISTV) as an evolved form of television that absorbs individual interactive functions into the current form of TV after the digitization of TV-related media.

ISTV is a multimedia-type TV with a built-in home server. It has three major characteristics:

- 1) Its built-in server would enable viewers to instantly call up news and other information which would be constantly updated automatically through home interactivity.**
- 2) Its media fusion capability would enable joint use of TV with other media.**
- 3) Its learning ability would make TV more "intelligent."**

Naturally, ISTV could function as a personal computer with a large Hi-Vision screen by simply switching the mode. This evolutionary form of TV would be remote-controlled, easy to handle,



reasonably priced and accessible. It would also be interactive, while taking advantage of TV's current features.

This idea is based on the Constraints-Programmed Macro-Model of Information Selection, which analyses macro and micro information activities (Figure 2). In short, people are not designed to take in information endlessly; their information activity is limited by the constraints of disposable time, money and interest. Therefore, Integrated Services TV (ISTV) has, as its basic framework, a combination of the information activities pursued by the largest number of viewers, with arrangement of quantity and types. Besides being inexpensive and easy to use, ISTV would be most likely to lay a social foundation for information-related infrastructure capable of the universal supply of news and information.

Broadcasters, too, would find ISTV a comparatively inexpensive investment, allowing them to provide multi-window services for their software and to make step-by-step advances into the multimedia age with comparative ease.

With the TV broadcasters' decision to use a TV with a built-in home server as a standard TV receiver of the digital age, TV will probably revive as node for all types of media, a primary access medium to information and entertainment and also a basic form of infrastructure for the newly extended distribution of information.

### **1. Details of Services Cannot Be Decided Until a System is Selected**

Details about software for new services in the multimedia age cannot be determined only on the basis of their technological functions, characteristics features or creators' ability. First, decisions must be made on such factors as media (transmission means), the household receiver or terminal, the main broadcaster, and costs. Until that is done, it will be impossible to create concrete images of software, forms of services and time-related service types.

Arguments and discussions under way today are so concerned with methods of transmission and the separate technological development of presentation methods that they lack the requirements for balanced and detailed discussions of the new services for multimedia-type TV. Among the most important requirements is to determine the functions of a

household terminal and its standardization. The future of media services depends on the extent to which a standard multimedia-type TV is to be equipped with additional functions, including those of a personal computer, laser disks, printer and communication devices.

Regarding the current broadcasting media, it is advisable that the search for the identity of broadcasting should be continued in all seriousness, rather than being swayed back and forth by discussions on multimedia technologies and functions. The definition of broadcasting as "wireless transmission for an unspecified number of people" was based on the physical characteristics of broadcast waves, reflecting the technological standard of the past. Many goals of broadcasters still remain to be achieved. But the multimedia technologies hold the key to solve some of the problems they face.

## **2. TV as the Node for Electronic Media**

From the viewpoints mentioned above, integrated services digital broadcasting (ISDB) can be proposed as a social system capable of providing multimedia-type broadcasting in an integrated manner and at low cost. NHK's future visions of broadcasting and other media described in its "guideline for mid to long term administration" (issued in January, 1995) include an integrated receiving terminal display with 1,125 scanning lines. What is envisioned here are integrated services ranging from terrestrial, satellite, CATV and digital Hi-Vision broadcasting to facsimile, high-function teletext, telemusic, PCM audio broadcasting and a program guide all presented through the node of an integrated display screen.

## **3. Integrated Services Television (ISTV) as Highly Evolved TV**

Personal computers and other multimedia equipment for home use have made remarkable progress as individual tools. TV-related media, on the other hand, have not been generally receptive to absorbing individual, interactive functions.

So, we examined the possibility of developing individual, interactive multimedia functions into a mass selection receiver-type TV. In short, the goal is highly evolved TV of the multimedia-type.

### (1) Evolving TV

Unlike personal computers, TV is not an extension of what's called reference communication, designed to be called up item by item at any time viewers like. ISTV aims to identify the most common information behavior on a daily basis and to become a simpler, more convenient and more accessible medium by linking media with media, applications with applications and software with software of any sort, while providing a common basis for reference.

#### 70 to 80% of Needs to be Covered

Menu Screen (right photo) shows one example of ISTV, a combination of a receiver and services for the digital broadcasting age, which was on display at the technology exhibition of NHK Broadcasting Science and Technology Laboratories held in May, 1996. The basic concept of this multimedia-type terminal for household use is an application of my "constraints-programmed macro-model of information selection." It is impossible for the mass reception-type media alone to provide services that can be called up and accessed by every user.

TV is not a personal computer and is not made to cater to people's desires 100%. Even so, TV should aim at covering 70 to 80% of most people's information behavior, in terms of application and software (Figure 3).

### (2) Media Fusion : TV for inter-media use

Multimedia type TV would connects a large variety of media to enhance their conveniency. The idea is to make the TV terminal the node of an electronic-related network. Linkage with electronic newspapers and the Internet has become possible. Considering combined use with electronic newspapers, the full mutual use of the display is only possible with ATV which has high-quality picture resolution. The Current TV is not able to present many characters clearly on the screen.

### (3) Personal TV :

#### TV with a built-in self-editing function

It is quite natural for TV to make best use of computer functions. A personal TV would automatically identify its user, be able to learn his usage habits at certain times and days of the week, and also have a built-in self-editing function to choose various programs and information.

### 4. Menu Screen, Category Screen, Item Screen



Menu Screen of ISTV

<http://www.strl.nhk.or.jp/newstoptics/mmlb/jp-fim/m3-j.html>

The above concept has led to the appearance of a multimedia-type TV with the following features:

An initialization screen like that of a personal computer can be seen on the TV screen. The menu has several windows that account for 60 to 70% of the basic needs of media users. The menu picture is designed to give users an overview of what's available, by staying on the screen for 7 to 15 seconds. (Users set their own convenient length of time.) If a user does nothing, the main picture appears automatically. In the menu picture are shown a TV newspaper with various categories of automatically updated news.

If users want to read some article in more detail after looking at the TV newspaper, they can call up that particular news item from the server and read it on a separate page. If a user needs an overview of a variety of news of different types, a category page can be called up for general, economic, international, sports, or culture/entertainment news, etc.. After that, users can further select individual news items or click back to the electronic newspaper or other internet services.

With the menu screen, category screen and individual news item page, multimedia TV will be able to cover daily the 100 to 200 news items transmitted by the current TV and the 400 to 600 headline stories of a newspaper. In other words, 70 to 80% of the general viewers' needs can be met.

(Those who want more specialized news and information in greater quantity could obtain that by concluding a special subscription agreement.)

#### Installation of Home Interactive Systems

It is assumed that ISTV will have a built-in home server with a storage capacity of about 10 hours. Considering that 90% of Japanese households today own video tape-recorders, it is not unreasonable to assume that the combination of TV and a home server will spread in a few years time. In the more distant

future, the server function will be extended to about 10-100 hours.

Broadcasters will be able to conduct automatic transmissions with an automatic updating system. Currently, the following six functions can be assumed for the ISTV for household use.

- 1) **"Anytime" news** (including headline news, sports news, with automatic 24 hour updating of major categories.)
- 2) **Anytime weather forecasts**
- 3) **Anytime program schedule and guide** (showing programming of other media)
- 4) **Anytime video** (automatic recording of a variety of videos, which can be called up on the screen with the touch of a key.)
- 5) **Latest Menu** (constant indication of software available on line or stored in the server. The TV will have a learning function to record preferred programs, based on previous experience.)
- 6) **Anytime audio** (radio news, English news and music can be heard at the touch of a key.)

The important thing is to provide functions that enable the TV to respond to information needs regarding news, sports news, weather forecasts and program guides that are often selected throughout the day. It is difficult to standardize from the start services that are linked to individual selection and a matter of personal interests, unless there is an increase in both the number of service items and the amount of expensive usage.

#### **Built-in Self-Editing TV Newspapers**

Along with the "anytime" news function, the most important function of TV is to offer fast-breaking important news. It automatically broadcasts round the clock news and weather forecasts and updates them to suit the need of users. It will be possible in the future to give weight to the contents of news and weather forecasts and also the number of items according to users' tastes and circumstances.

These applications make it possible for users to select images and information that they prefer. For example, headlines of general top news (corresponding to the first page of a newspaper), international, politics, economy, sports, society, culture/entertainment, and local matters will all be constantly updated automatically. (The number of categories and items are to be determined by trends in

needs.) Of course, further references can be made regarding each item to obtain additional information.

The overall concept obtained from the above discussion is one in which broadcasters transmit stock-type programs for each day all at once, perhaps at a fixed time in the morning, and constantly broadcast at fixed intervals automatically updated news and weather information so that users can watch them at home at the most convenient times through a simple "home interactive" system. By attaching a printer to the TV set, it would also be possible to transmit at any time a TV newspaper the size of a tabloid edition. All these services depend on to what extent personal computers, laser discs, printers and communication functions can be standardized and installed.

#### **5. Evaluation of ISTV**

Coinciding with this ISTV technology exhibition, the NHK Broadcasting Science and Technical Research Laboratories conducted a questionnaire survey on people inside and outside NHK, the Laboratories's staff, as well as the production staff: producers, directors, cameramen and so on, as well as other researchers. The results of this survey are as follows in **table 1** (Number of respondents, 402, June 1996).

"Fantastic, simple and pleasant!" These words are used in advertisements to describe household electric appliances, and this description should be the essence of multimedia-type TV. An immediate goal of its developers is not far from that of the conventional TV -- to be a medium enjoyed while one is relaxing, or occasionally sitting up straight to watch more closely when a topic is interesting. ISTV should be developed vigorously to suit viewers' interests and tastes, physiology, and budget.

#### **Summary**

As long as people cannot take in information endlessly and there is a limit to their information gathering behavior in terms of disposable time, money and interest, ISTV will prepare a social foundation for an information-related infrastructure, thanks to its economy, convenience and universal supply of information.

I believe that such evolution for TV will lead to the revitalization of TV in the digital age, as the node of all other electronic media and the first window of contact with information. Other media will develop around

TV.

Thanks to the decision by TV broadcasters to designate "TV with a server" as the standard TV receiver for the digital age, TV will probably continue to play a role as a node for all media and the primary means of access to all sorts of information and entertainment in the 21st century. Television will revive as basic infrastructure for the newly expanded distribution of information.

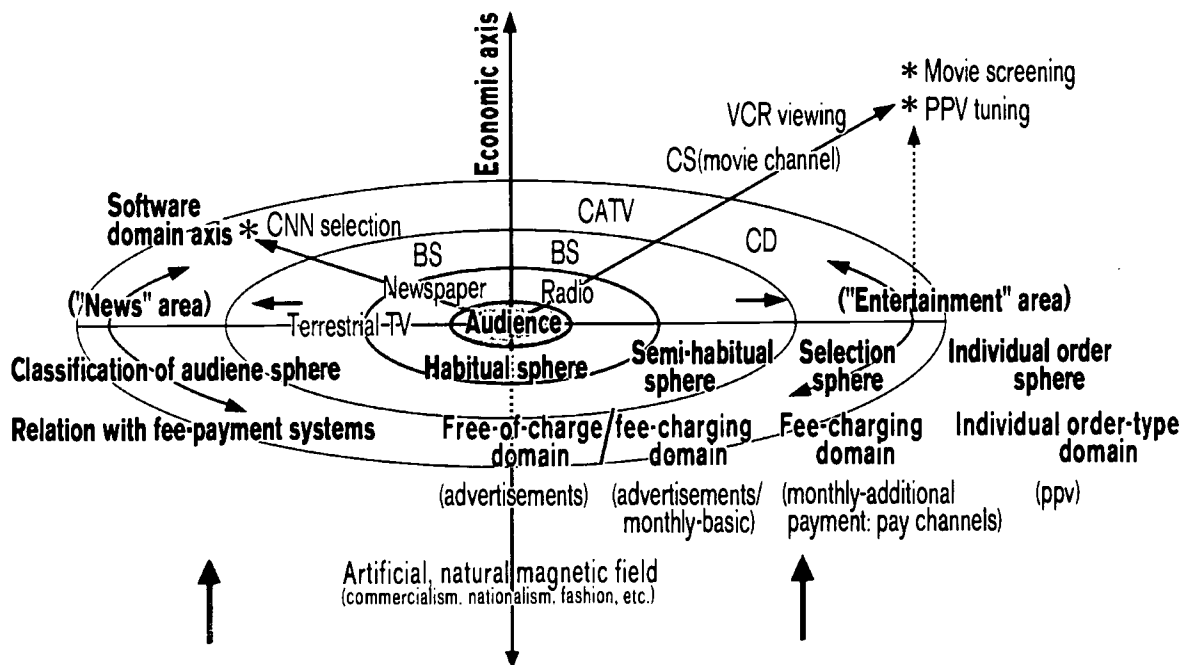
### Thanks and Acknowledgements

I would like to take this opportunity to thank A. Yanagimachi, Executive Research Engineer of NHK's Science and Technical Research Laboratories and leader of its special project, the multimedia lab; T. Isobe and A. Ohya, Senior Research Engineer of the Digital Broadcasting System Research Division; and Researchers K. Kai, K. Usui and M. Ueno, for discussions which contributed to the formation of this author's concept of ISTV as presented in this paper. The author joined the special project multimedia lab as an Executive Producer of the Media Development Project.

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N.B.

1. The space location is an imagined one.
2. Media that lose out in market competition are omitted from the circle plane.
3. Based on this mental map, the audience behaves "selectively" floating freely in the information space.

Figure 1. Formation of the audience sphere (1995, Nagaya)

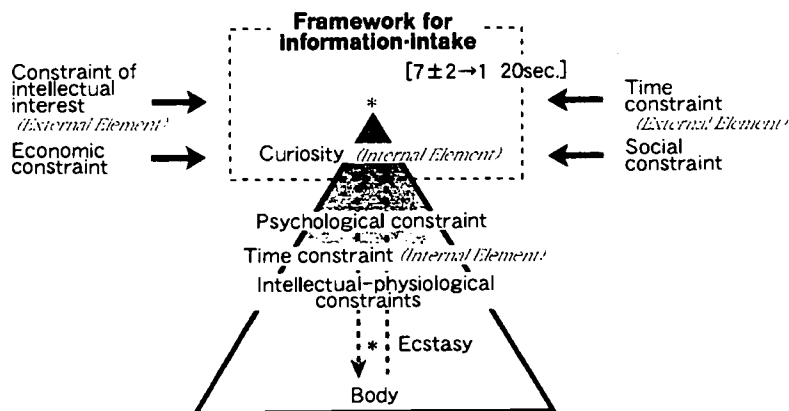


Figure 2. Constraints-programmed macro-model of information selection (1995, Nagaya)

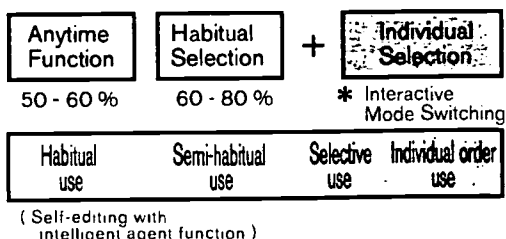


Figure 3. ISTV:  
The Range of Coverage (1996, Nagaya)

Table 1. Survey Results

Respondents support Built-In Home Server		Evaluation of a menu screen	
For	96%	Very convenient	47%
Against	2%	Comparatively convenient	42%
No comment	2%	Rather unnecessary	6%
		Totally unnecessary	5%
Overall Evaluation of Development Direction		Functional Evaluation of Overall Layout & Services of ISTV	
Very good	39%	Quite agreeable as a whole	31%
Generally good	43%	Quite interesting as a whole	31%
Need to change direction	7%	Misdirected as a whole	31%
Don't know	9%	Somewhat misplaced	11%
		Not interested	1%
		Don't know / No comment	3%



ftp://ftp.genmagic.com/pub/internet/PTC97-v7ppt.zip  
 ftp://ftp.genmagic.com/pub/internet/PTC97-v4ppt.zip  
 ftp://ftp.genmagic.com/pub/internet/PTC97-http.zip

## ***Future of the Internet: Future of Telecommunications?***

**Pacific Telecommunications Council**

**Midyear Seminar**

**Yokohama, Japan**

**3 June 1997**

**Anthony M. Rutkowski**

mailto:tony@genmagic.com, <http://www.chaos.com/rutkowski.html>

V.P. Internet Business Development

General Magic, Inc

<http://www.genmagic.com/>

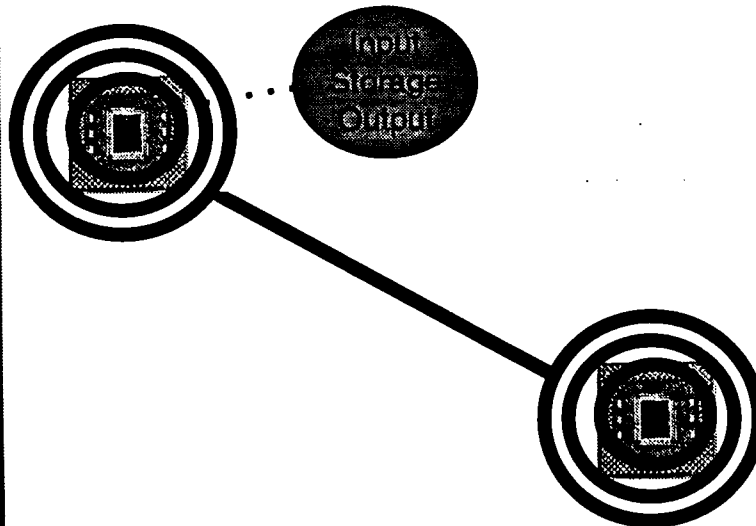
Sunnyvale CA USA

## **Paradigm Shifts**

- **Infrastructure > commodity**
- **Internet > glue/paradigm**
- **WWW > knowledge base**
- **Innovation, access, discovery > value**
- **Services & sectors > converge**
- **Organization & economics > change**
- **Emergence of infostructure and metastructure**

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## The Infrastructure Revolution



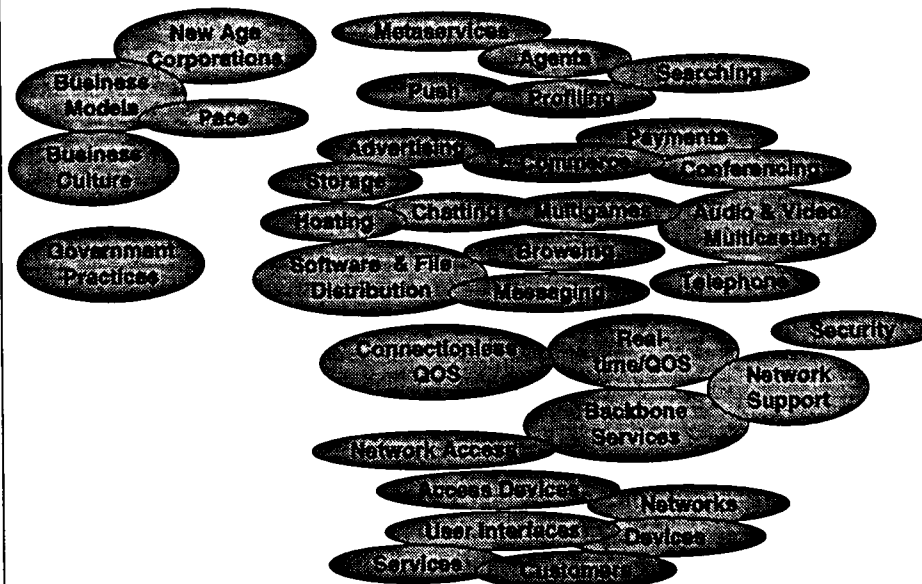
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## Key Structural Pieces

- ***InfraStructure***
- ***Devices***
- ***Diverse, autonomous ownership/control***
- ***Interfaces for ordinary and mobile people***
- ***Networked open platforms***
- ***InfoStructure***
- ***Cartography***
- ***MetaStructure***
- ***Enabled-incented people & organizations***
- ***Electronic commerce***

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## The Infra, Info, Meta Structure Tree



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## The Internet Juggernaut

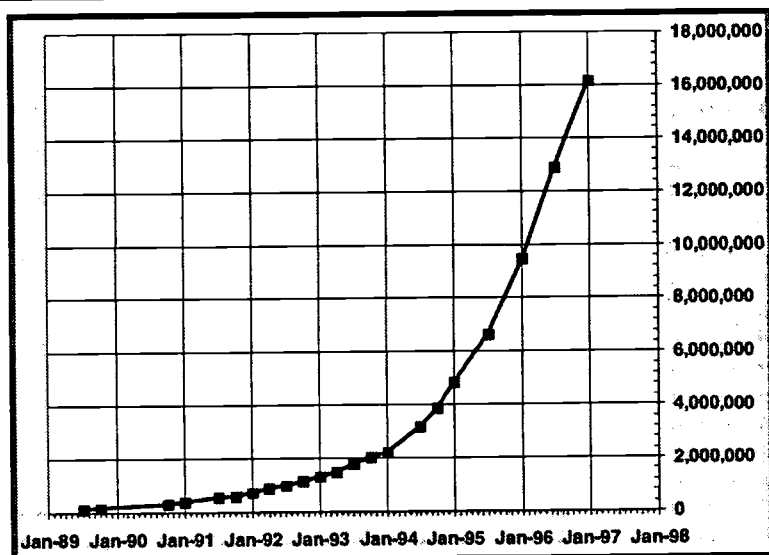
- Intranets, extranets, intrawebs....everywhere
- Internet backbone pipes
- New access pipes
- New access devices, hosts, and architectures
- New platforms and integration tools
- New applications and services
- Middleware: search, profile, push, channeling and agents
- E-commerce support
- New business models and practices
- Public policy, legal, governance issues

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## Continued Scaling

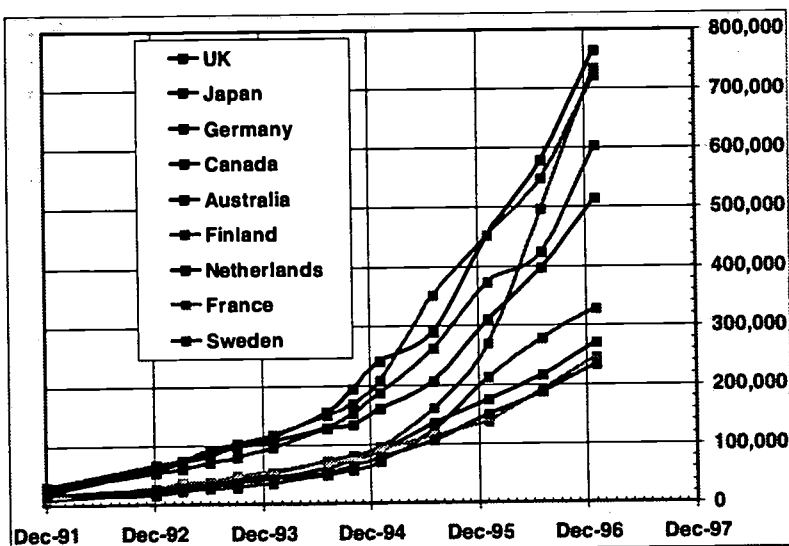
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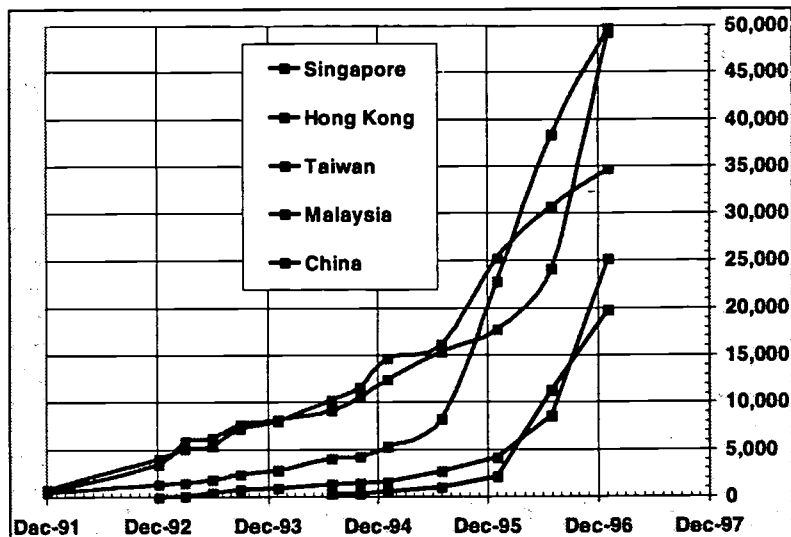


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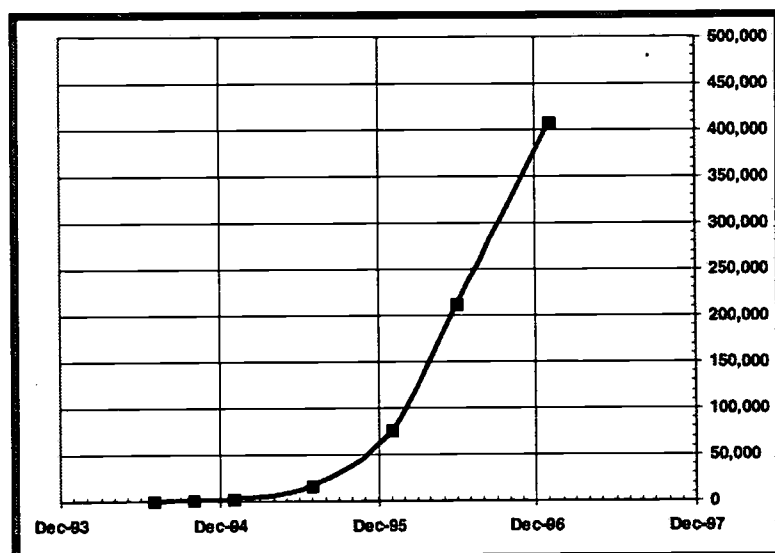
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WWW  
Hosts:



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## **Intranets, extranets, intrawebs...**

- The platforms, products, and tools have become the glue for corporations, institutions, small business, professionals
- SOHO use the biggest emerging low-end market
- Business is where the revenue exists
- Market demand has produced administratively friendly products
- Rewiring is a huge business
- Major synergy with other services for telcos

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## **Internet backbones**

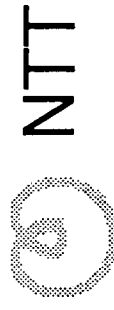
- Scaling is a problem
- QOS increasingly an issue
- National alternative CATV architectures emerging
- Fast IP vs. Tag vs. massively parallel switching competition emerging
- TransPacific Internet bandwidth now exceeds telephony and fax
- Large multilateral exchange facilities exceeding 500 Mbit/s, doubling every six months
- Shift from multilateral to bilateral architectures
- Next millennium LEO-based global systems potentially entering

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# NTT's Overseas Business Strategy

June 3, 1997

Noboru MIYAWAKI  
Senior Executive Vice President  
International Affairs Headquarters



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## Topics

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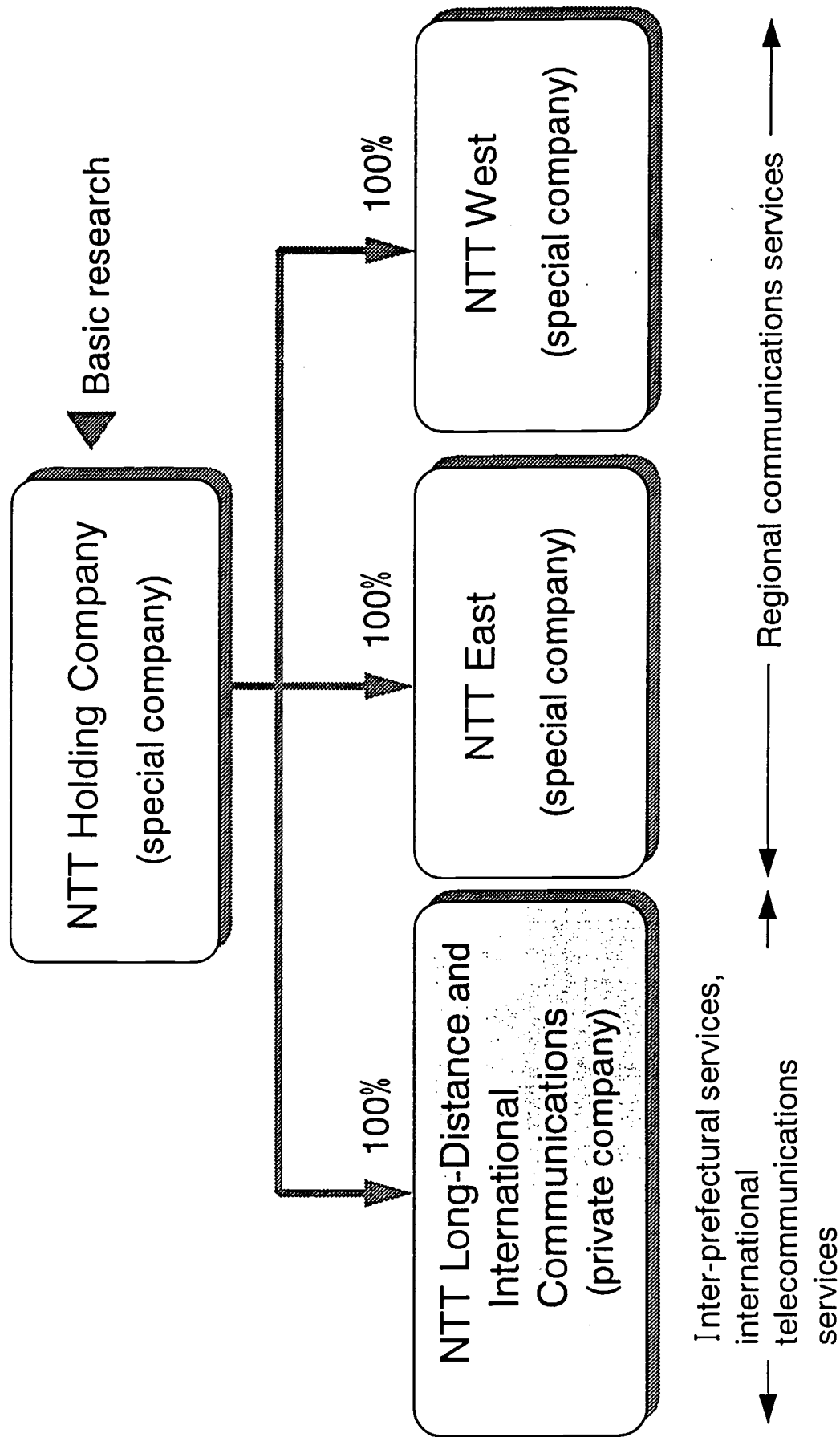
### 1. Japanese Telecommunications Market Trends

- Reorganization of NTT in 1999 : Overview
- Relationship between Domestic and Global Markets

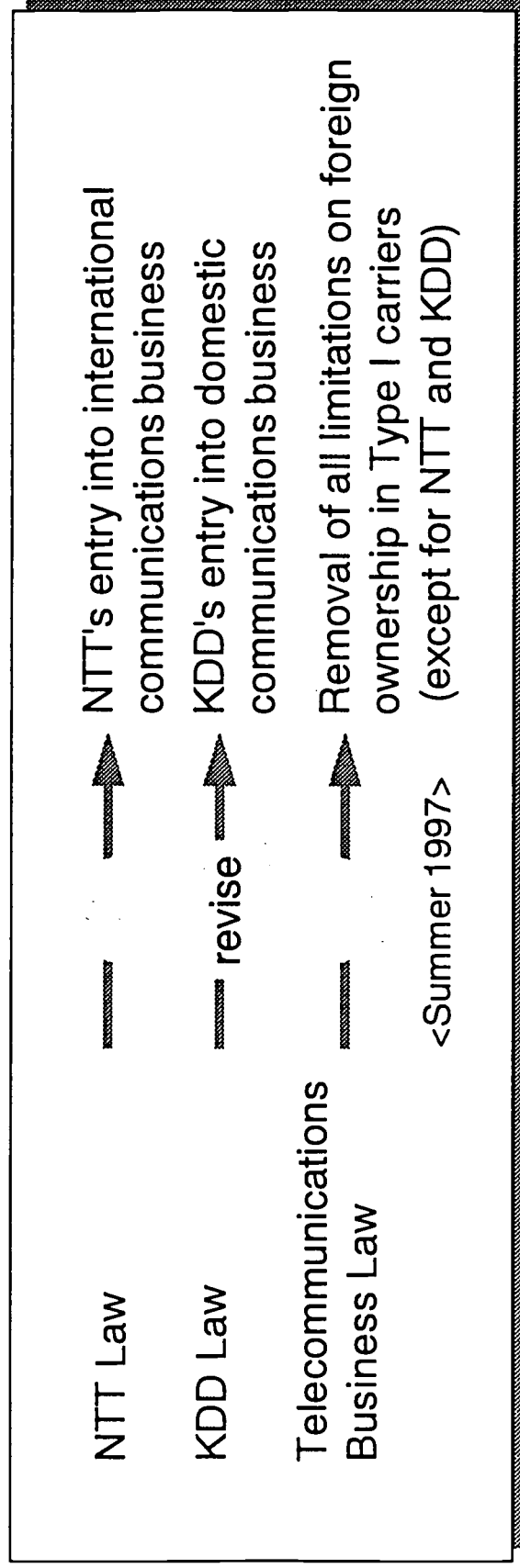
### 2. NTT's Overseas Business Strategy

- The Global Telecommunications
- NTT's Vision of Global Business
- Participation in Multimedia Projects in Asia
  - Malaysian Multimedia Super Corridor Project
  - The Asian Multimedia Forum

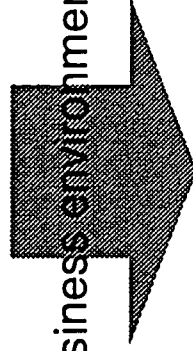
## Reorganization of NTT in 1999



## Relationship between Domestic and Global Markets



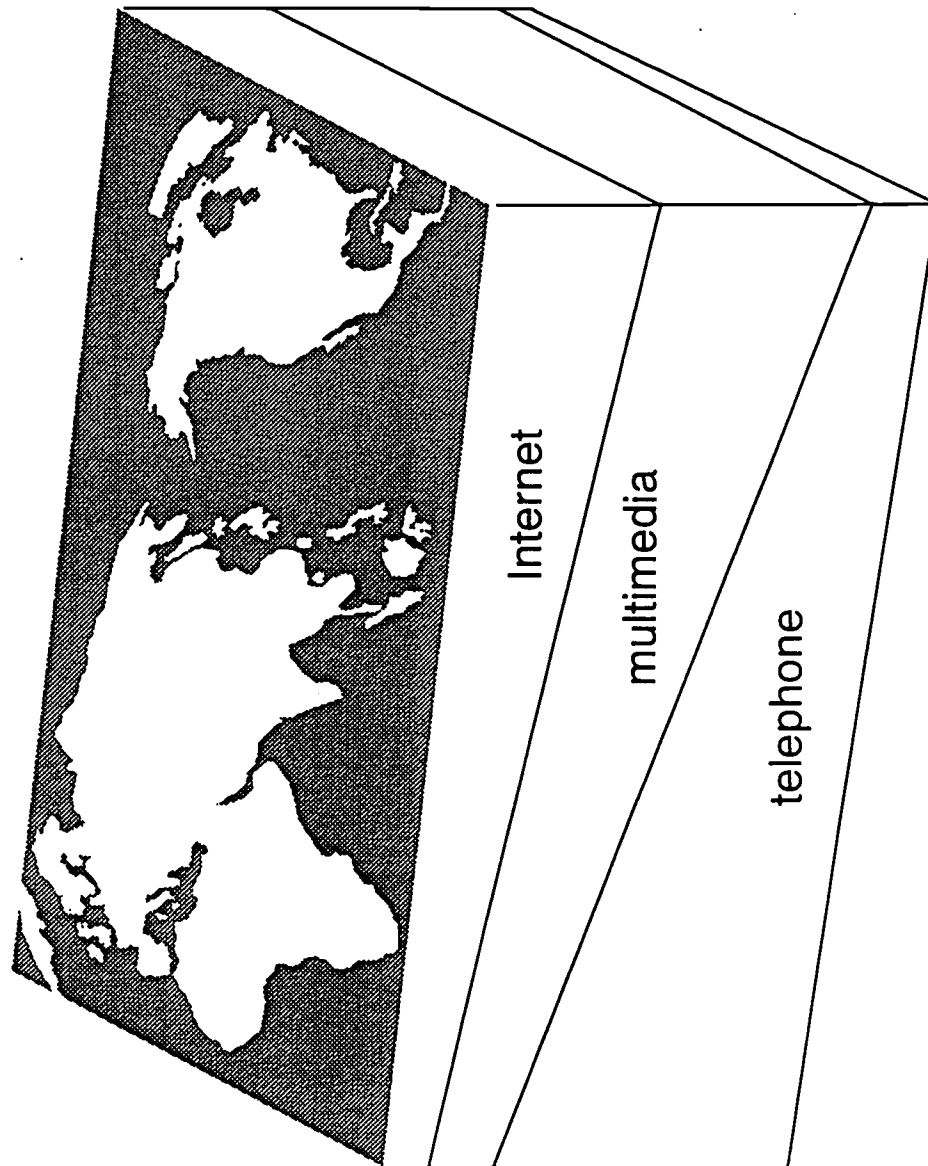
Improve domestic business environment to promote competition



### Expected Results :

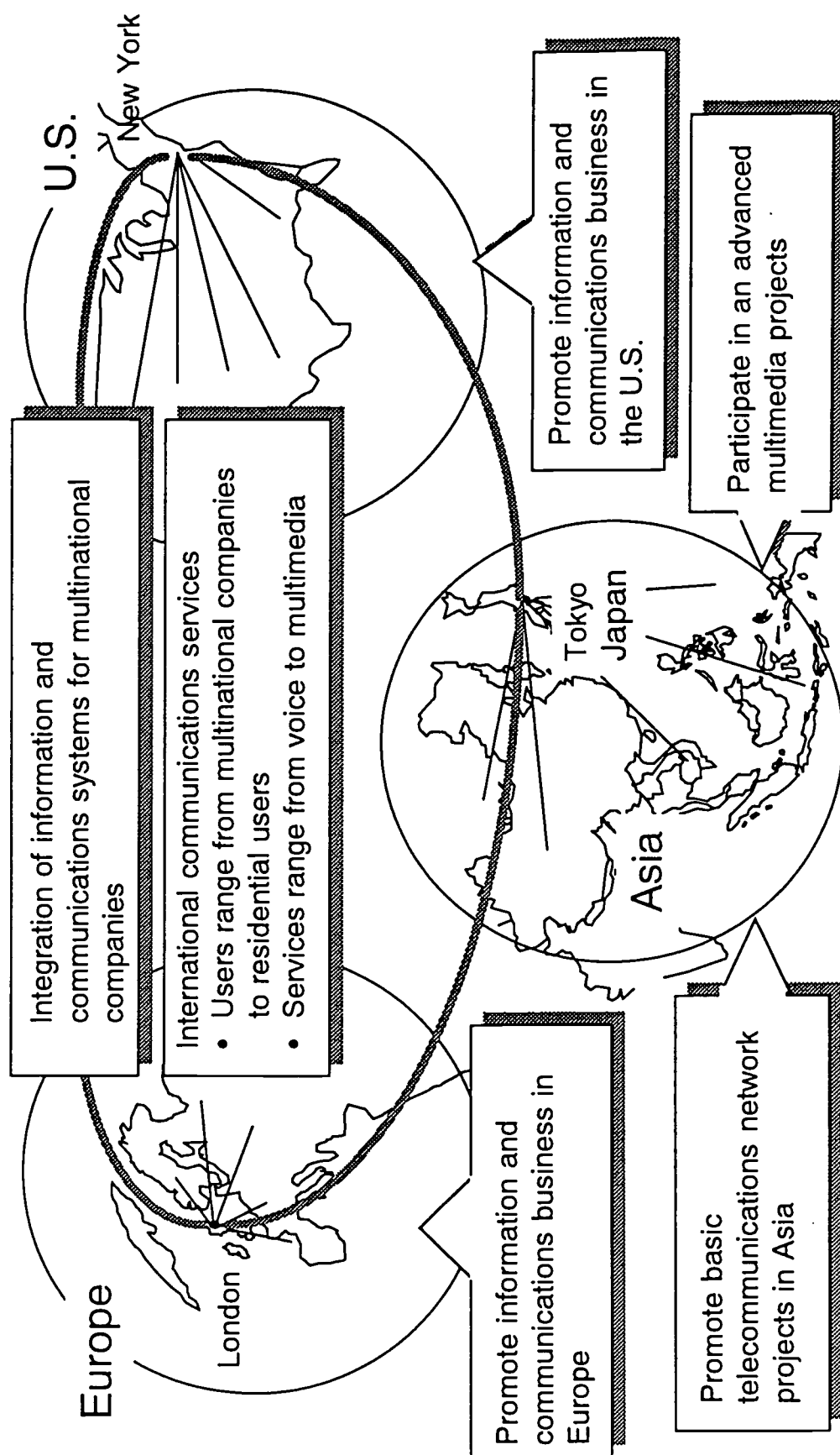
- Competition and tie-ups between domestic carriers
- Foreign carriers' entry into domestic market, and active alliance formations

## The Global Telecommunications



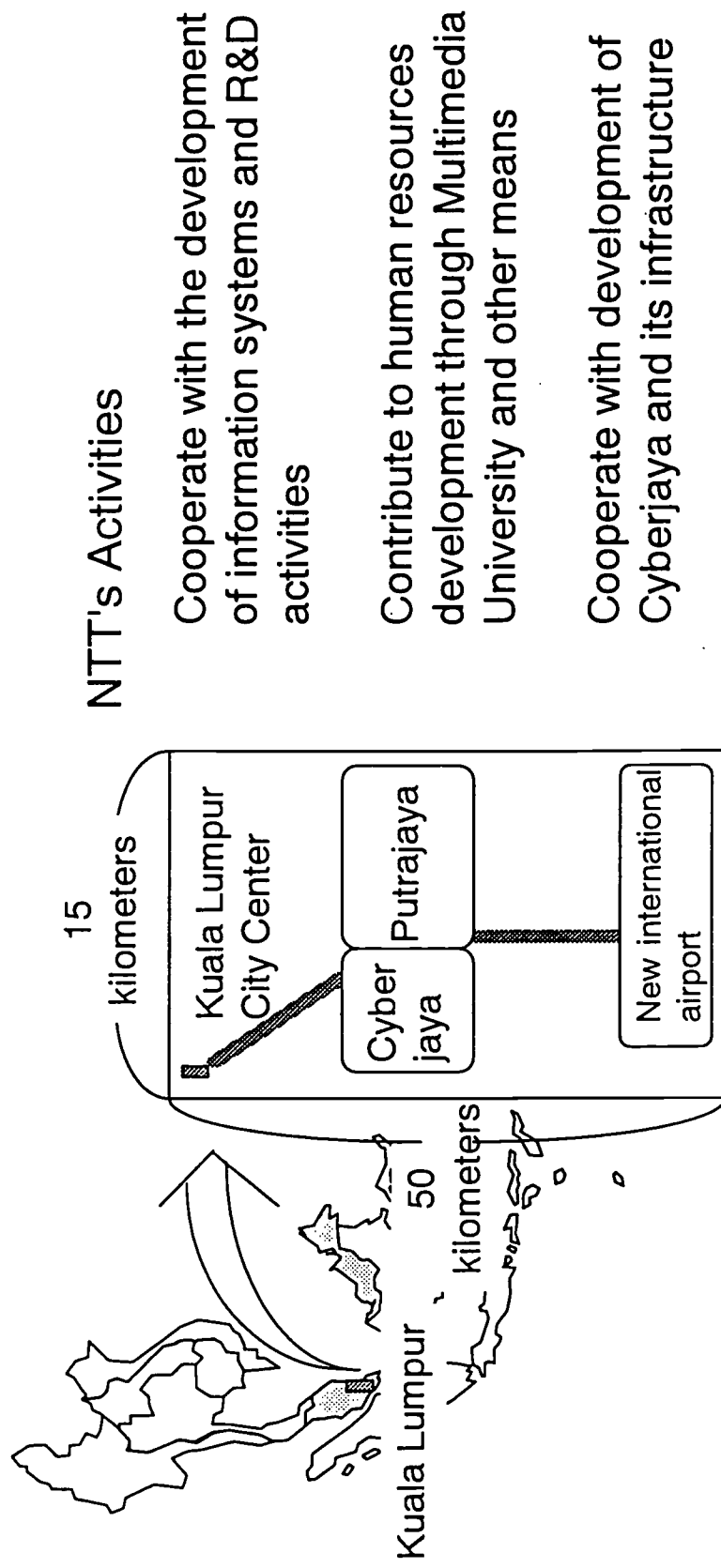


## NTT's Vision of Global Business



## Participation in Multimedia Projects in Asia : MSC

### Malaysian Multimedia Super Corridor Project



## Participation in Multimedia Projects in Asia : AMF (Asian Multimedia Forum)

### Members

Principal Members	General Members	Users Members	Advisory Group
----------------------	--------------------	------------------	-------------------

### Open Forum

### Activities

Mutual participation in various multimedia tests

Promotion &  
support activities

Joint R&D

International  
test beds

### Objectives

Open forum to :

- develop and proliferate multimedia applications & services throughout Asia
- establish a common platform for multimedia communications & services

***"KDD's Future strategy,  
clicking on the Asia-Pacific region"***

**PTC 1997 Mid year Seminar**

**June 3, 1997**

**Tohru OHTA**

**EXECUTIVE VICE PRESIDENT**

**K D D**



**KDD**

***Paradigm Shift of our Business***

- *Technological Developments*
- *Globalization of Market Needs*
- *Deregulation and Privatization*



**Monopoly**

**Half Circuits**

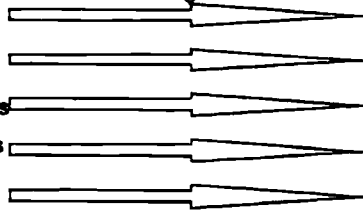
**National Markets**

**Correspondents**

**Public Utility**



**KDD**



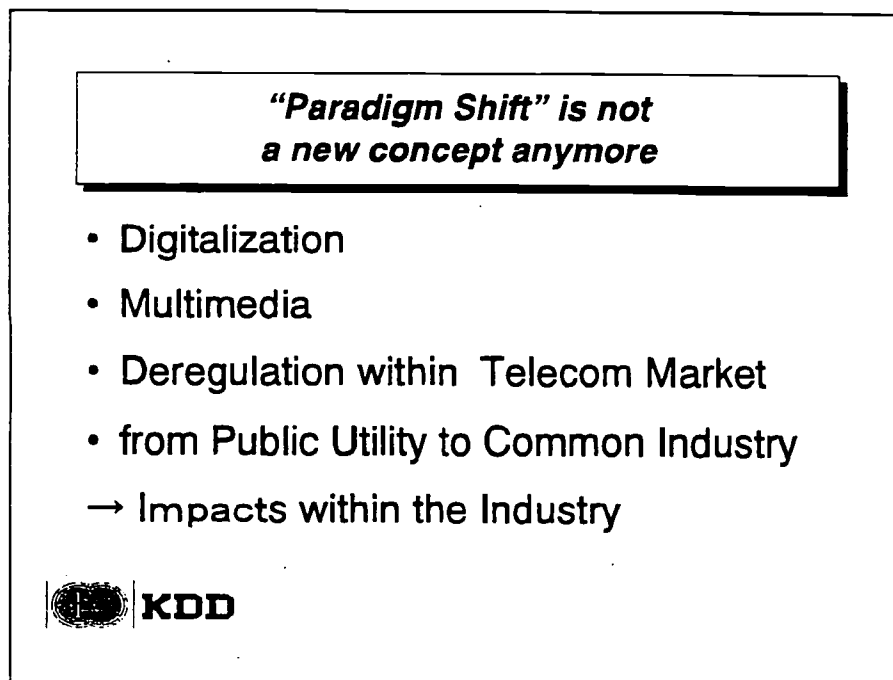
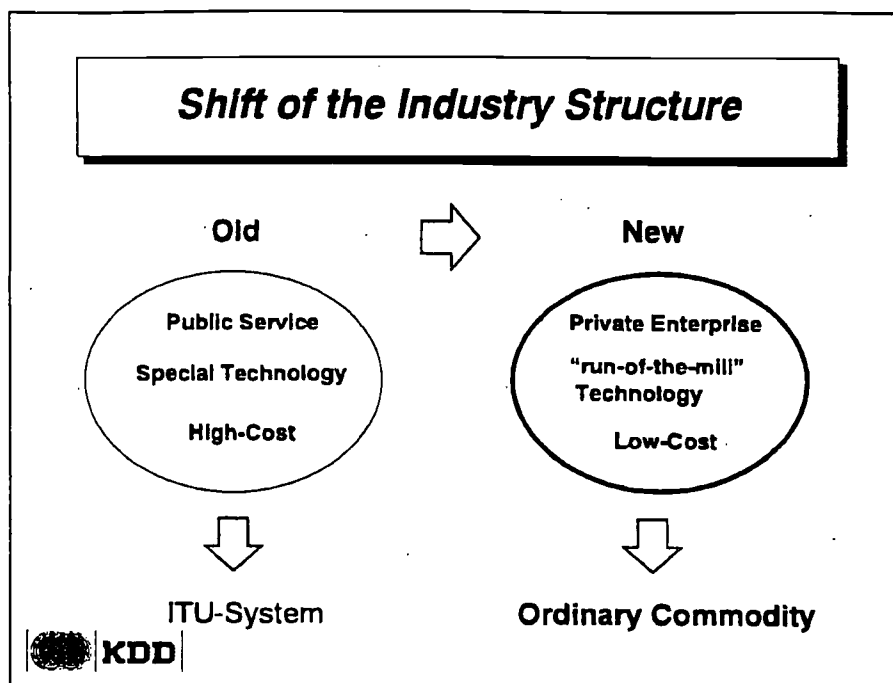
**Competition**

**End-to-End Services**

**Multi-National Markets**

**Alliances**

**Commodity**



***Fundamental change now:  
- Revolution -***

- Global Multimedia technology
- Digital highway worldwide
- Circuit-switched hierarchical network  
→ horizontal distributed network
- Accord of the WTO NGBT

**Revolution of whole lifestyle of  
human community**



**KDD**

***Global network society***

- Internet, Intra-net, and Extra-net
- one world market
- New life style :  
tele-shop, tele-work, tele-medicine,  
distant education, automatic  
interpreter etc...

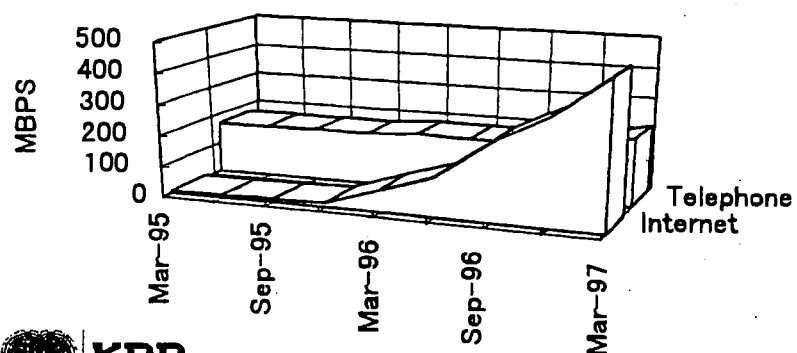
**Barriers of time, distance, and  
language will disappear**



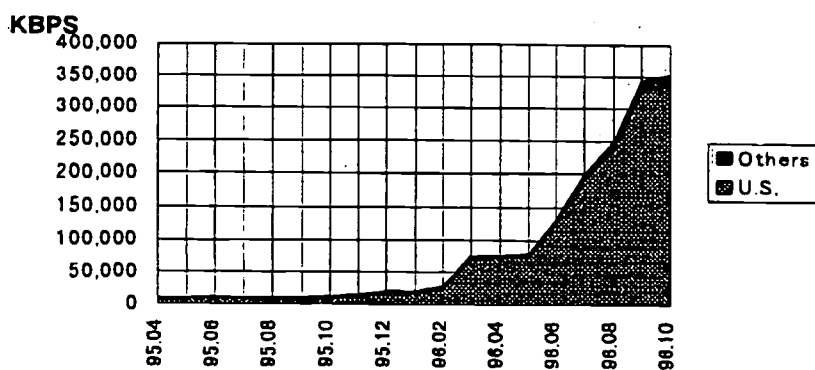
**KDD**

### Growth of Internet Circuit Capacity

(Japan / US.)

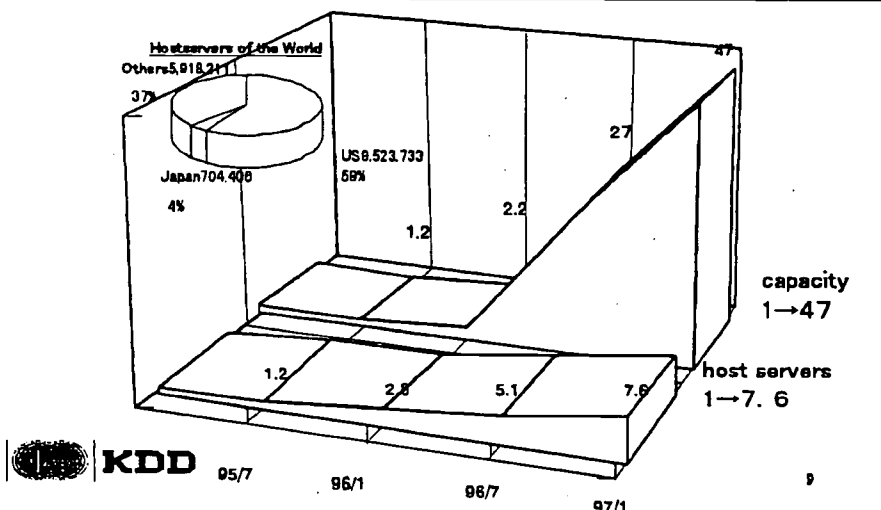


### Internet Circuit Capacity (From Japan)



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### **The growth of Internet Capacity and Host Servers between Japan and US (Jan 95= 1)**



### **Cooperative approach for global network society**

- Infrastructure constructor
- Platform equipment providers
- Contents providers

**KDD**



### ***Asia-Pacific Potentiality***

- Growth center of the world economy  
30% of world GDP  
57% of world population
- Enormous diversity of :  
Languages, Religions, Ethnic groups  
and Cultures
- Asia-Pacific common sentiment

**KDD**

### ***Themes for future development***

- Non-discriminative basis network  
Construction
- Regional and worldwide cooperation of  
developing leading edge technology
- Care for variety of regional situation and  
respect for cultural backgrounds
- Governments and private sectors  
collaboration

**KDD**

### ***KDD's Strategies and Concept***

- Universal service provision to all over the world
- More competitive Tariff cut
- Development of various services
- Playing international role
- Overseas business development
- Development of multimedia business
- Entry to domestic telecommunications market



**KDD**

***Change means Progress***

# **Wireless Communications in Korea**

## **The New Strategy under Competition and Open-door Policy**

**June 3, 1997**

**SK Telecom**

### **Contents**

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- O Telecommunications History**
- O Types of Wireless Communication Services**
- O Policy Trends of the MIC**
- O Development of Telecom Network**
- O Cellular Service**
- O Paging Service**
- O PCS**
- O CT - 2**
- O TRS**
- O Wireless Data**
- O Mobile Satellite Service**
- O SK Telecom Overview/Strategy/Vision**

## Brief History of Telecommunications (Cont'd)

---

1988 Total number of Wireline subscribers exceeded 10 million

1992 Competition introduced in Paging Service Market (11 NCCs)

1994 Second Cellular Service License issued (STI)

1996 CDMA Cellular Service Launched  
27 Licenses issued (3 PCS, 6 TRS, 1 International Telecom,  
1 Paging, 11 CT-2, 3 Wireless Data, 2 Lease Line)

1997 Wireline subscribers over 20 million  
New Licenses expected (1 Local, 1 Long Distance, 1 Paging, 4 TRS)

---

**SK Telecom**

## Types of Wireless Communication Services

---

- o Cellular Service
- o Paging Service
- o Personal Communications Service (PCS)
- o CT - 2
- o Trunked Radio System (TRS)
- o Wireless Data
- o Mobile Satellite Service (MSS)
- o Future Service
  - GMPCS, WLL, FPLMTS, etc.

---

**SK Telecom**

## Policy Trends of the MIC

---

### Expedite Competition

- Open entry & withdrawal for the services which do not require government approval for frequency use
- Adopt frequency allocation policy

### Deregulation

- Lift government control on tariff from August 1997
- M&A among telecom service providers allowed

### Fair Competition

- Establish fair environment of competition in terms of telecom facilities sharing, interconnection ordinance, accounting separation, prohibition on cross-subsidy

**SK Telecom**

## Policy Trends of the MIC (Cont'd)

---

### Open Market

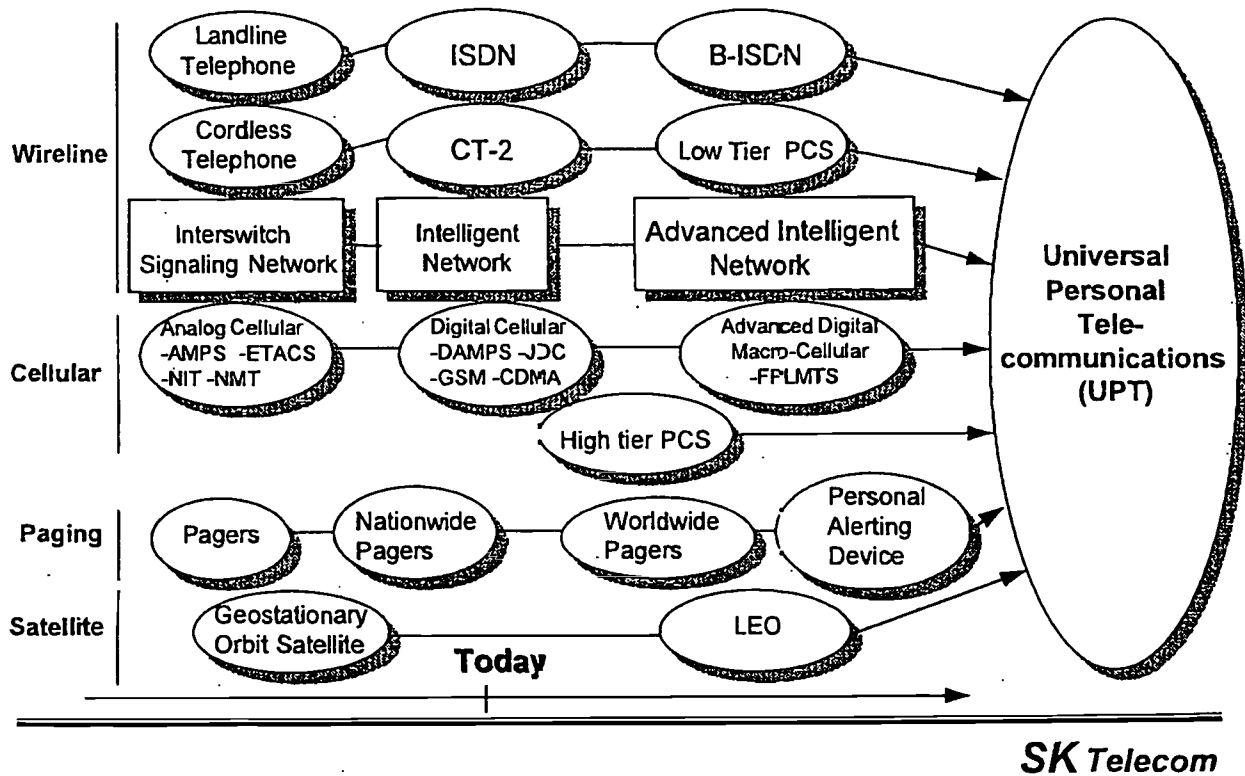
- Equal share limit for Koreans and Foreigners from 1998
- Foreign major share holder allowed from 1999

### Integration of Telecommunications & Broadcasting

- Set up new rules for multimedia era

**SK Telecom**

## Development of Telecom Network



## Cellular Service - Market Overview

**Subscriber Annual Growth Rate : 98.9% since 1984**  
 - Analog Growth Rate since Digital service: 40.4%

### Total number of subscribers

- Appx. 4 million as of May 1997 The 9th largest in the world  
 - Digital: 1.88 million, Analog: 2.13 million

**Digital Transition to be completed by 2005**

**Future Demand to be changed with market situation**  
 - Introduction of new services : PCS, CT-2, TRS, etc.  
 - PCS as the most competitive service

SK Telecom

## Cellular Service - Market Overview (Cont'd)

Geographical difference remarkable

- Subscribers of Seoul Metropolitan Area: 51.9% of the total

Tariff expected to decrease sharply due to high Competition and Deregulation

Decreasing tariff: History of SK Telecom Tariff

(unit : won)

	6. '90	2. '96	12. '96
Deposit	650,000	200,000	200,000
Entrance Fee	-	70,000	70,000
Basic Rate	27,000	22,000	21,000
Call Charge	25/10 sec	32/10 sec	28/10 sec

**SK Telecom**

## Cellular Service - Competition Status

Duopolistic competition with new digital service from April 1996

As of May 1997

	SK Telecom	Shinsegi Telecom
Service Launch	1984	1996
System	AMPS, CDMA	CDMA only
Number of Subscribers	Analog : 2.13 million Digital : 1.88 million	Digital : 530,000

## Cellular Service - Competition Status (Cont'd)

### Current Tariff System

(unit : won)

		SK Telecom	Shinsegi Telecom
Activation Fee	Deposit	200,000	200,000
	Entrance Fee	70,000	70,000
Airtime Charge	Economy Plan	Basic Rate 17,500 Call Charge 46/10 sec - Discount time 9/10 sec	-
	Standard Plan	Basic Rate 21,000 Call Charge 28/10 sec	Basic Rate 22,000 Call Charge 24/10 sec - Discount time 24/14 sec - After midnight 8/14 sec
	Premium Plan	Basic Rate 59,000 Call Charge 21/10 sec - Discount time 15/10 sec - Free airtime 270 min	Basic Rate 55,000 Call Charge 19/10 sec - Discount time 19/14 sec - after Midnight 19/42 sec - Free airtime 300 min

SK Telecom

## Paging Service - Market Overview

1982 Tone Service began with NEC system

1986 Numeric Service began with Motorola system

Subscribers began to increase

- 1982~1996: Annual Growth Rate 67.7%
- May 1997 : 13.5 million
- \* Number of subscriber-The 3rd in the world
- \* Penetration rate-The 2nd in the world

Background of high growth

- Active marketing of operators: Teenager's booming
- Consistent decrease of tariff: W12,000/mth ('86), W8,000/mth('95)
- Various Services
  - . VMS, Alpha-numeric, Daily information, National Paging, etc.
- Operators' subsidy for sales agents

SK Telecom



## Paging Service - Market Overview (Cont'd)

**Subscriber Growth Rate lowered as market matured**

- Growth Rate (Unit: %)			
Year	1994	1995	1996
Growth Rate	140.7	51.8	31.8

**Advanced Paging & Two-way Paging as new markets**

- Advanced paging service introduced this year
  - . Protocol: Motorola's FLEX (6,400 bps)
  - . Number of Subscribers will increase to 200,000
  - . Long Alpha-numeric service will be possible
- Two-way paging service as a new service to break through saturated paging market

**SK Telecom**

## Paging Service - Competition Status

**New service providers permitted: 10 NCCs in 1992, 1 NCC in 1996**

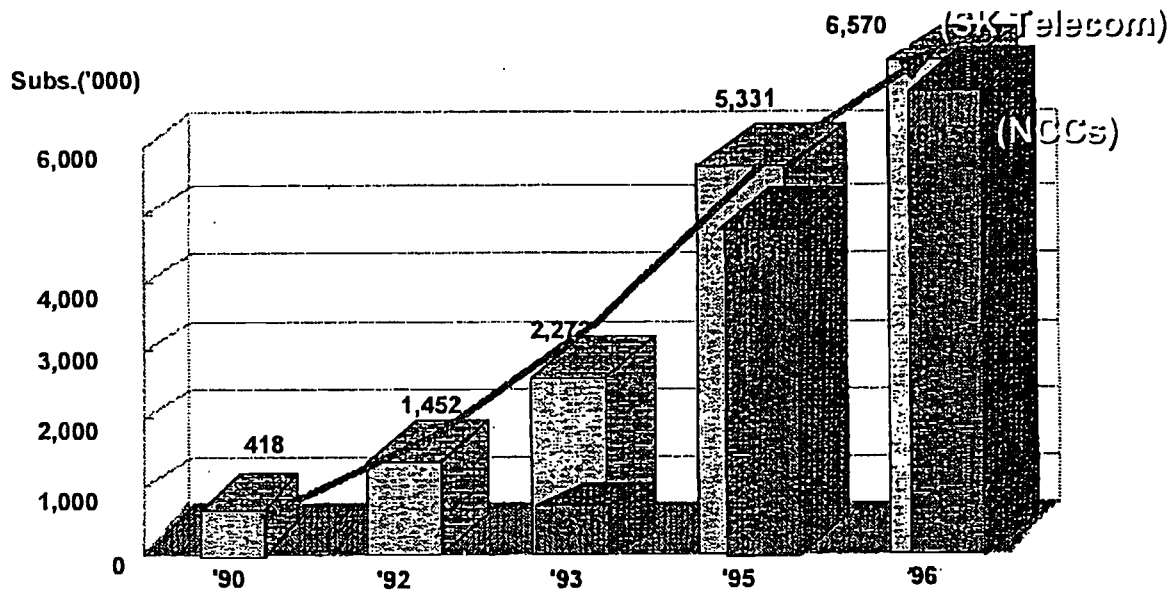
(As of May 26 '97, unit : 1,000)

		Type of Services	Launch Date	Service Area	Number of Subscribers
National	SK Telecom	Tone, Numeric Alpha-numeric	'82. 12	Nationwide	6,904
Seoul Area	Seoul Mobile Telecom	Numeric Alpha-numeric	'93. 8	Seoul Metropolitan Area	2,221
	Naray Mobile Telecom	Numeric Alpha-numeric	'93. 8		2,108
	Happy Mobile Telecom	Advanced Paging (Numeric, Alpha-)	'97. 5		-
Others	8 NCCs	Numeric Alpha-numeric	'93. 8 ~ '93.11	Local Area	2,391

**SK Telecom**

## Paging Service - Competition Status (Cont'd)

### Annual Demand Trends



SK Telecom

## Paging Service - Competition Status (Cont'd)

### Tariff System

(unit : won)

	Numeric Service					Alpha-numeric Service				
	Basic Rate	Value-added Service		Deposit	Installation Fee	Basic Rate	Value-added Service		Deposit	Installation Fee
		VMS	Wide				VMS	Info service		
SK Telecom	8,000	2,700	2,700	22,000	4,400	14,500	2,700	500	34,000	4,400
Seoul Mobile Telecom	7,900	3,000	2,500	22,000	4,400	14,500	3,000	500	34,000	4,400

## PCS

Similar service with cellular at different bandwidth (CDMA)

- Cellular : 800MHz
- PCS : 1.8 GHz

3 Licenses issued (1996)

- KT Freetel, Hansol PCS, LG Telecom

Service expect to begin from the 3rd quarter of 1997

Demand forecast

- Different forecasts depending on service area, tariff, service quality
- Not optimistic without remarkable low tariff

**SK Telecom**

## CT - 2 Service

Permitted to KT and paging operators (1996)

- Niche service between cellular and paging market

Commercial service from March 1997

- 3 operators : 100,000 subscriber in Seoul Metropolitan Area

Market prospects

- Successful initial launch
- Gray future : Decreasing subscription rate and rising churning rate
  - . Decreasing tariff of cellular service
  - . Imminent PCS service
  - . Limited service area

**SK Telecom**

## TRS

**1993 First analog TRS service : Hankook TRS Co.**

**1996 6 new licenses issued  
- 1 National operator included**

**1997 4 new licenses being issued**

**Major customers : Transportation/Warehouse companies,  
Distribution companies**

### Market prospects

- 1996's demand : 30,761 (6 times that of 1995)
- Digital TRS expected at the end of 1997
- Market potential only if good service such as ESMR
- Expected demand of 2000 : Approx. 800,000

**SK Telecom**

## Wireless Data

**1996 3 Licenses issued**

**1997 Commercial service expected from July 1997**

### Market prospects

- Bright future on a long-term basis
- Uncertain market on a short-term basis
- Expected subscribers
  - . Year 2000 : 100,000
  - . Year 2010 : 4,500,000

**SK Telecom**

## Mobile Satellite service

**INMARSAT service being provided**

**GMPCS using LEO expected from 1998**

**4 LEO projects invested by Korean companies**

- Iridium : SK Telecom
- Global star : Hyundai, Dacom
- ICO : KT, Samsung, Shinsegi Telecom
- Odyssey : Kumho, Daewoo

**Intrim licenses expected to be issued by the MIC this yer**

**SK Telecom**

## Future Services

**Expected new future services : WLL (Wireless Local Loop), FPLMTS, Wireless Multimedia, etc.**

**WLL expected to be adopted by a new local exchange service operators**

- System being developed by ETRI supported by KT & Dacom
- System standard expected to be adopted at TTA in Jun. 1997

**FPLMTS (IMT-2000) being strongly supported by the MIC**

- Research consortium by 1996, technology development by 2001
- License to be issued only after 1998
  - . Technology standardization schedule
  - . Technology development trends in Korea

**SK Telecom**

## **SK Telecom Overview**

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**1984 Founded as Korea Mobile Telecom**

**1994 Sunkyong Group took controlling stock of KMT**

**1996 Introduced the first commercial CDMA digital service in the world**

**1997 SK Telecom as a new name**

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**SK Telecom**

## **SK Telecom Overview (Cont'd)**

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**Largest CDMA digital cellular sub. base in the world**

- Analog subscriber : 2.13 million, Digital subscriber : 1.35 million
- Market share in Korea : 88%

**Seamless cellular and paging coverage nationwide**

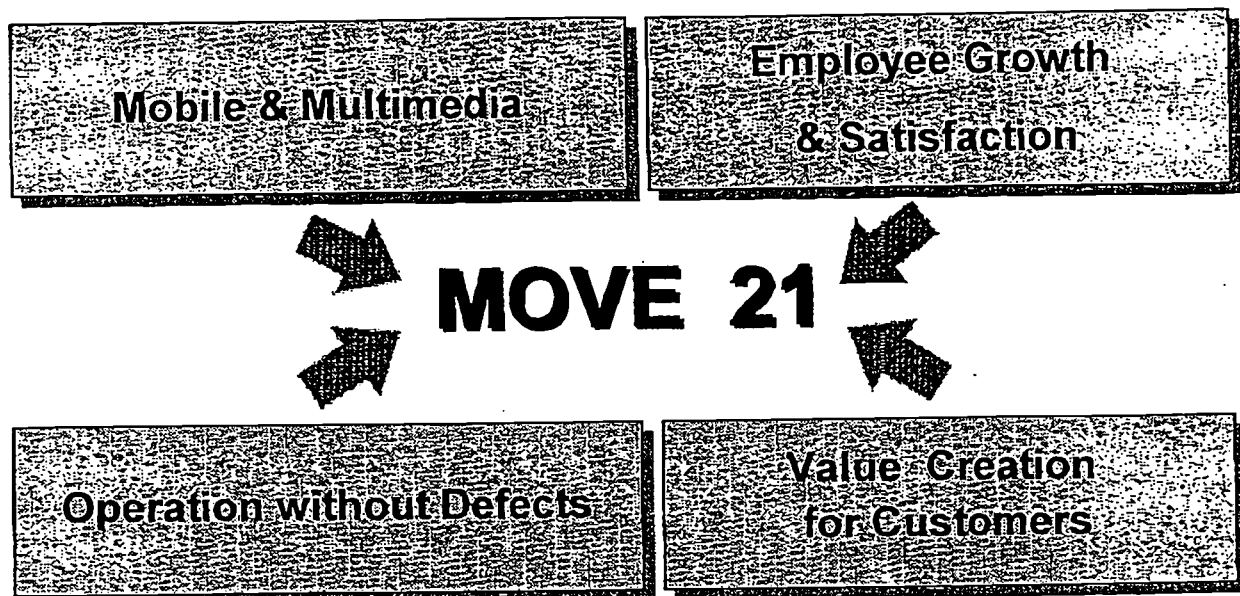
- Paging subscriber : 6.9 million
- Market share of Korean market : 50.7%

**Invested in Iridium Project as a founding investor**

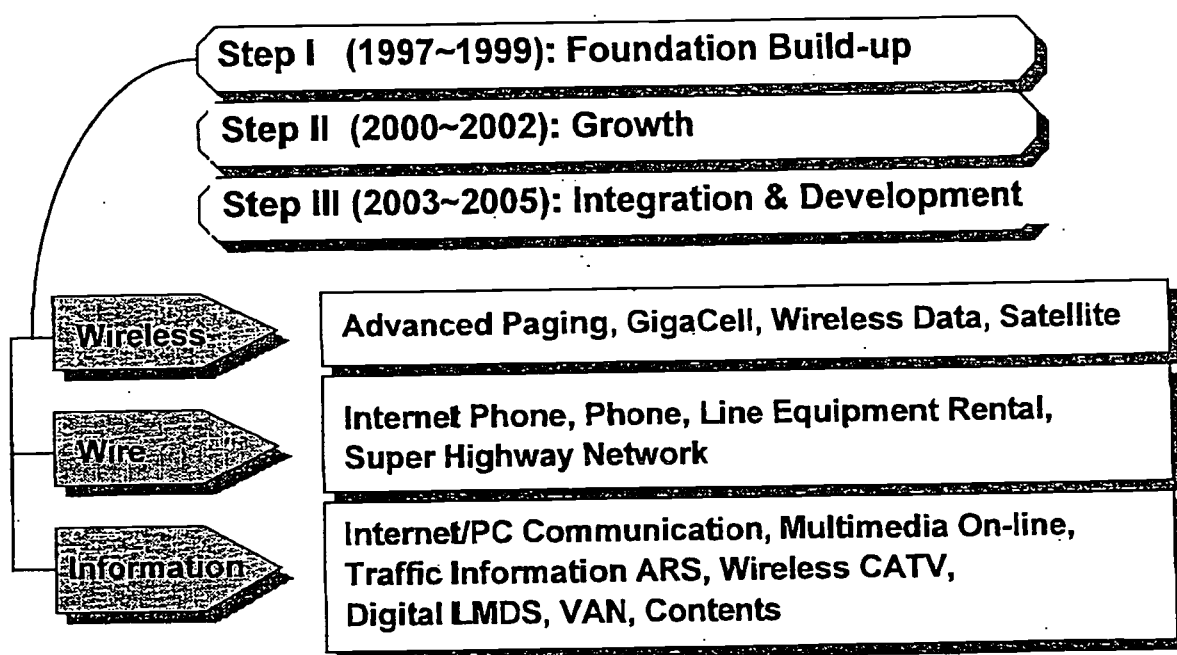
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**SK Telecom**

# SK Telecom - New Strategy



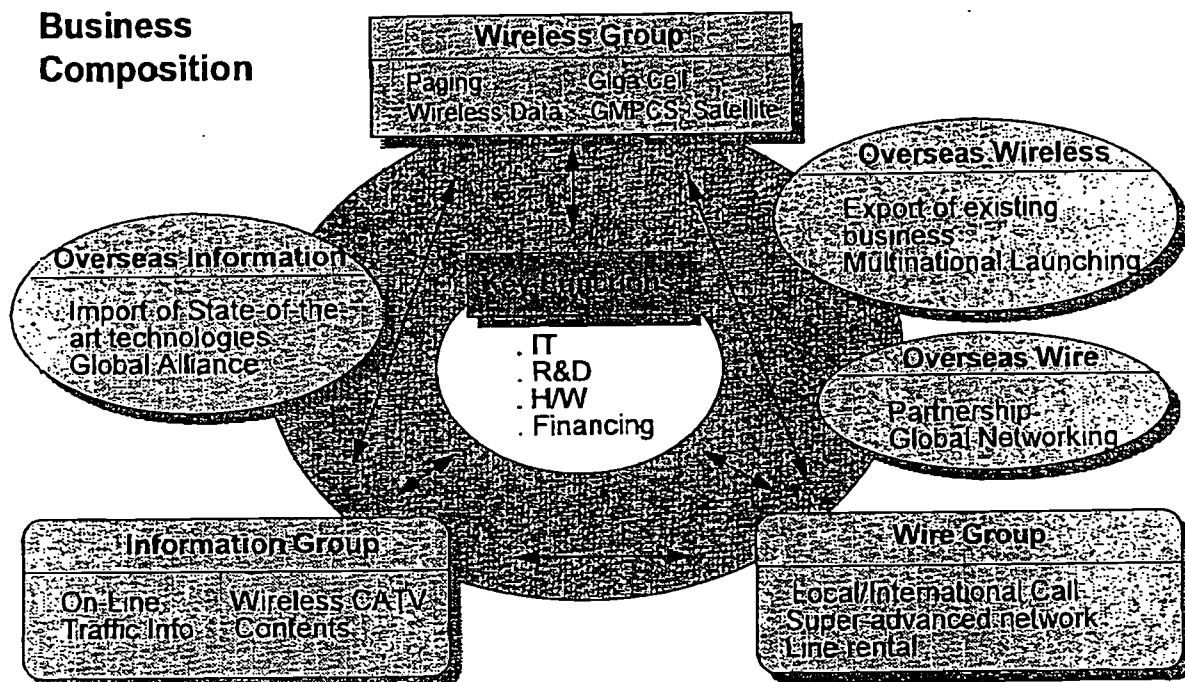
## SK Telecom - New Strategy (Cont'd)





# SK Telecom - Vision for 21 the Century

## Business Composition



**SK Telecom**

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# **U.S. User Requirements and Industry Implications**

**Lee A. Daniels**

**President**

**AT&T Japan Ltd.**

**June 3, 1997**

1

## **Customer Requirements**

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- ◆Global Seamless Service**
- ◆Bundled Services**
- ◆Online Services**



# Customer Requirements

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## ◆ Global Seamless Service



### Global Seamless Service - Industry Impact

#### Multinational Market

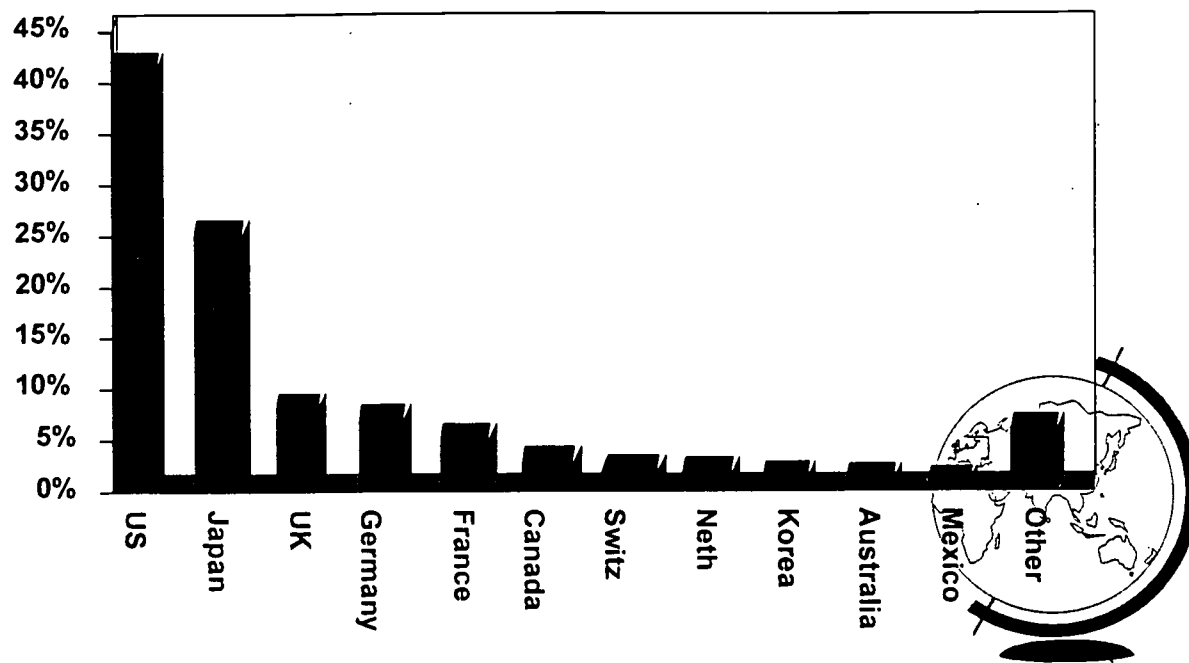
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- ◆ 3752 Multinational Companies
  - Operations in the U.S.
  - Locations in Three Other Countries
  - On Two Different Continents
- ◆ \$20.8B in Telecommunications Expenditures



## **Breakdown Of The “Global 2000” By Location**

---



### Global Seamless Service - Industry Impact

## **Changing Global Environment For Large Multinational Companies**

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- ✦ Businesses searching for new markets and improved manufacturing/distribution locations worldwide
- ✦ Competitive pressures forcing major restructuring of large multinational companies (MNCs)
- ✦ “Globalization” of MNC operations is increasing need for borderless communications services
- ✦ MNCs are increasingly seeking single vendor relationships to manage their complex telecommunications needs on a local, regional, and global basis



## Global Seamless Service - Implications For AT&T

### **AT&T Is One Of The Leading Members Of World Partners Association**

---

- ✦ WorldPartners Association was created in response to the needs of multinational companies for global seamless services
- ✦ World Partners includes 15 member companies and covers 32 countries
- ✦ Customers enjoy a single point of accountability for ordering, provisioning, maintenance, and billing for WorldSource services
- ✦ A single global network connects all of the customer's locations whether they are in Sydney, Omaha, Kuala Lumpur, New York or Amsterdam
- ✦ World Partners Association is the largest and most highly rated global services alliance in the world



## Global Seamless Service - Implications For AT&T

### **Market Votes AT&T #1**

---

**“ A clear leader emerged as the overall Winning Carrier. AT&T swept the board, coming first in nearly all categories...”**

*Communications Week International Survey*  
*March, 1997*



## Market Votes WorldPartners #1

“AT&T WorldPartners appeared the strong leader for alliance services with a healthy 3.9 rating. Ratings for other alliances were far lower; Concert achieved 3.4, Global One 3.2 and Unisource 3.0.”

*Communications Week International Survey  
March 1997*



## Customer Requirements

◆ **Global Seamless Service**

◆ **Bundled Services**



### **Bundled Services - Industry Impact**

## **Research Reveals Consumers' Preference For Bundling**

- ♦ Consumers indicate a strong desire for consolidating telecom, entertainment and other services into a single package
- ♦ In the U.S., AT&T has the greatest brand strength amongst consumers for communications packages across the top communications and information technology companies.
- ♦ Consumers want to bundle services for:
  - Convenience
  - Savings
  - Service Improvement



Source: AT&T Provider Preference Study, 1995 and AT&T Strategic Offer Options Study, Oct 1995; IDC/Link Study 1996

### **Bundled Services - Industry Impact**

## **Bundling Needs Of Business Customers**

- ♦ Integrated account management/one point of interface
- ♦ One bill
- ♦ Discounts across products and services
- ♦ One-stop shopping



### **Bundled Services - Implications For AT&T**

#### **AT&T Has Expanded In The Areas Of Wireless, Online, Local and Entertainment, While Strengthening Its Core LD Business**

- ♦ Leverage 85 million consumer and small business LD customer base
- ♦ AT&T Wireless has more than 6.5 million customers
- ♦ Launched AT&T Digital PCS to 70 million people in 40 metropolitan markets in the U.S.
- ♦ Filed to offer local service in all 50 states
- ♦ Announced home entertainment packages created by DIRECTV and USSB
- ♦ Launched AT&T WorldNet in 1996
- ♦ Universal Card Services is one of the biggest credit card companies in the U.S. and was rated the top customer service company by J. D. Power and Associates in both 1995 and 1996



### **Bundled Services - Implications For AT&T**

#### **Examples Of AT&T Bundles For Consumers**

- ♦ Controlled local services introduction in California for consumers, enabling AT&T to offer end-to-end telephone service
- ♦ Customers purchasing DIRECTV/USSB entertainment system from AT&T receive special rebate if an AT&T Long-Distance customer and special financing if an AT&T UCS cardholder
- ♦ Since October, AT&T has had the technical capability to offer a single bill for long-distance, wireless and online services
  - In the next year, AT&T will have the capability to add Universal Card Services and toll-free services
- ♦ AT&T customers can earn True Rewards points on wireless and wireline services



## **Examples Of AT&T Bundles For Business Customers**

- ♦ ***ATT.ALL*** offers customers a single bill combining long-distance, local, wireless, data and Internet services.
- ♦ ***AT&T Digital Link*** initially allows businesses to use private lines connected to AT&T's facilities for outbound local calling
- ♦ ***AT&T Business Local Service*** simplifies pricing by offering a flat rate per minute to call anywhere in the state at anytime
- ♦ ***AT&T Resources for New Business*** offers a single source for information about all aspects of starting a new business
  - Offers consulting, free seminars, discounts from national vendors, a helpful website and the quality and reliability of AT&T long-distance services



## **Customer Requirements**

- ♦ **Global Seamless Service**
- ♦ **Bundled Services**
- ♦ **Online Services**





## **You Know You Are An Internet Junkie if....**

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55

- ♦ **You wake up at 3 a.m. to go to the bathroom and stop to check your e-mail on the way back to bed**



## **You Know You Are An Internet Junkie if....**

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- ♦ **You start introducing yourself as “JohnDoe at AOL dot com.”**



## **You Know You Are An Internet Junkie if....**

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56

- ◆ **You name your children  
Eudora, Mozilla and Dotcom**



## **You Know You Are An Internet Junkie if....**

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- ◆ **You laugh at people with 9600  
baud modems**



## **You Know You Are An Internet Junkie if....**

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- ♦ **You check your mail. It says “no messages.” So you check it again.**



## **You Know You Are An Internet Junkie if....**

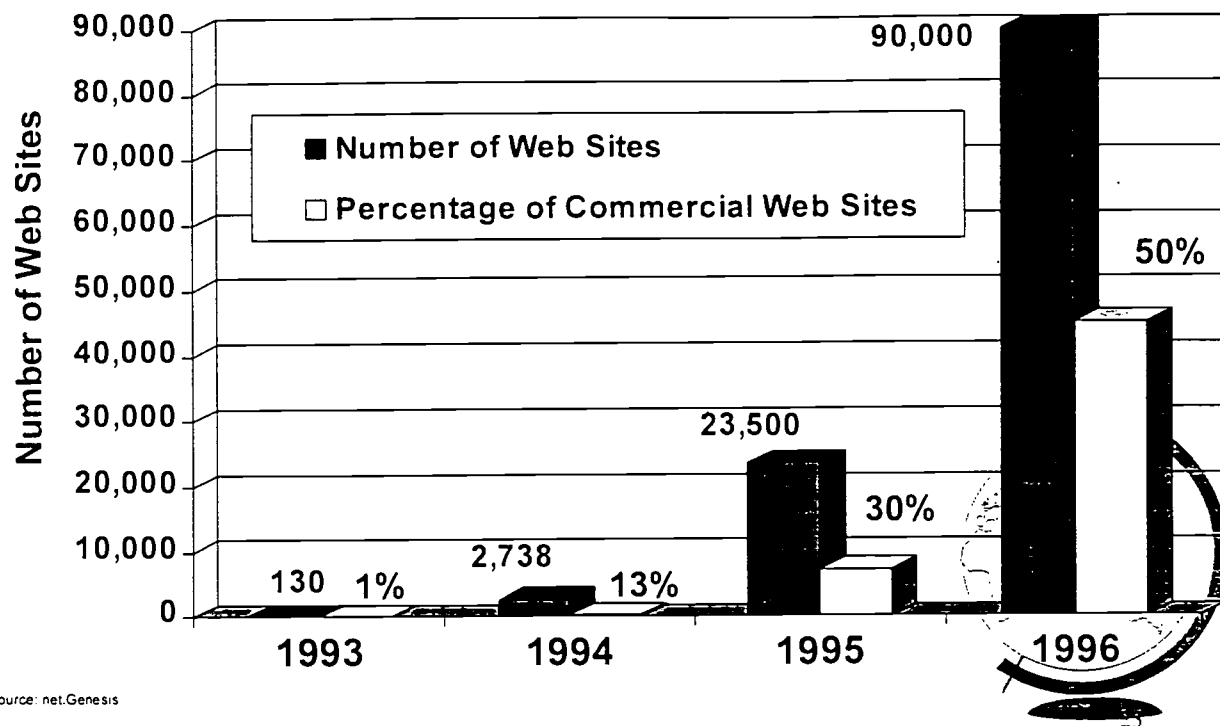
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- ♦ **Your cat has its own home page**



## Online Services - Implications For AT&T

### Growth Of The WWW Has Been Dramatic

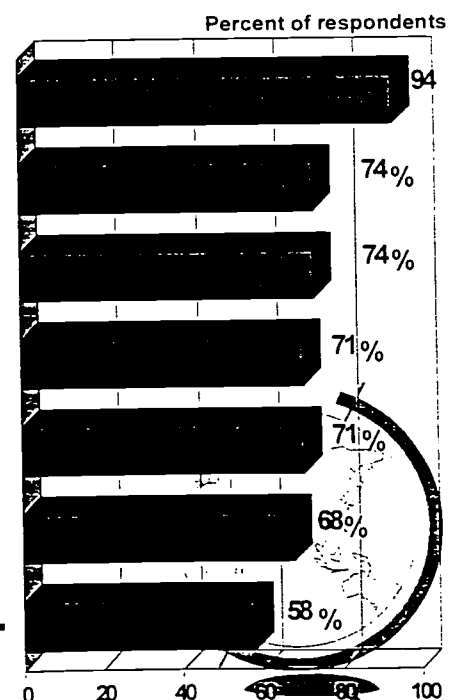


## Online Services - Industry Impact

### Why Companies Are On The Web Today

#### Companies With Over 100 Employees

- Enhance Public Image — — — — —
- Distribute Product & Pricing Information
- Improve Customer Service — — — — —
- Generate Sales Leads — — — — —
- Communicate with Reps/Suppliers
- Improve intra-company Communications
- Generate Orders — — — — —



Source: ActivMedia survey of companies with online presence

Consumer Applications on the Web - Shopping

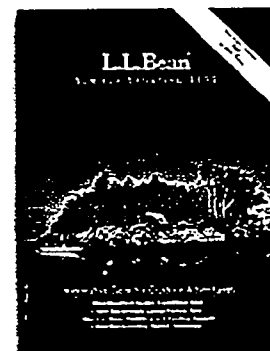
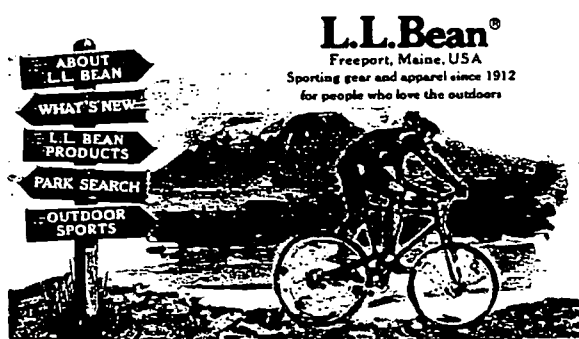


- 1.1 Million Titles Available
- Up to 30% Off List Prices
- Fast World Wide Delivery
- Customer Book Reviews Posting



Consumer Applications on the Web - Online Catalogues

L.L. Bean HomePage - <http://www.llbean.com/c.html>



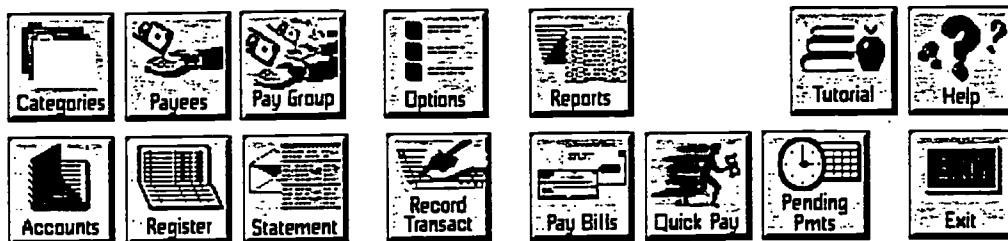
- Online Product Catalog and Ordering Information
- Global Availability
- Content Catering to Target Market



## Industry Impact - Online Services

### Consumer Applications on the Web - Electronic Banking

Security First Network Bank - <http://www.sfnb.com/>



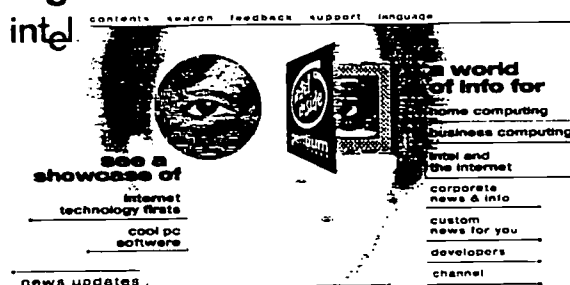
- Significant Lower Overhead Costs
- Convenient and Time-Effective for Customer
- Secure Global Reach



## Industry Impact - Online Services

### Consumer Applications On The Web - Communications

Intel HomePage - [www.intel.com](http://www.intel.com)



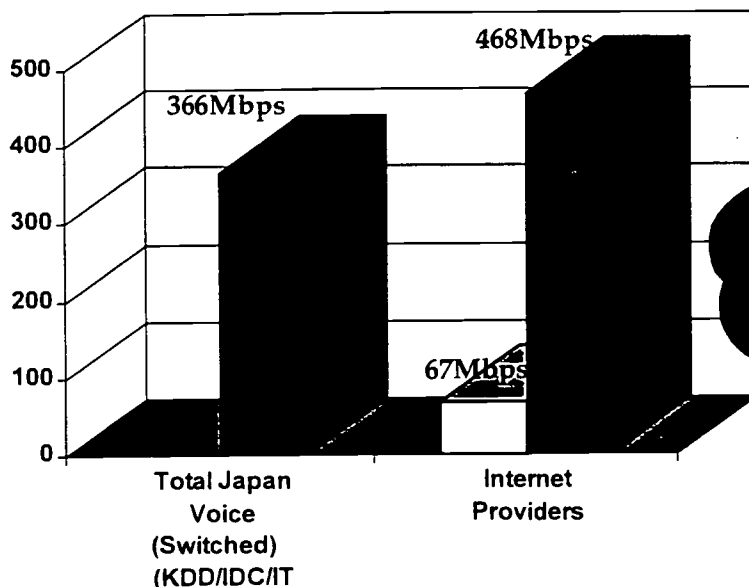
- In 1996, e-mail messages exceeded postal mail - 95 billion versus 85 billion
- Over 60 million e-mail users at end of 1996
- About 30,000 People Make Internet Calls Today
- Some 30 Million Browsers Equipped for Using Internet Phone



## Online Services - Industry Impact

**The Internet Access Market Is Growing Explosively And Has Become A Major Source Of Leased Line Demand**

### US/Japan Circuits in Service



Source: Asahi Newspaper, Feb. 3, 1997



## Online Services - Implications For AT&T

**AT&T Launched The AT&T WorldNet Service In 1996**

- ✦ Signed up more than 800,000 customers to AT&T's WorldNet offer for Internet access
- ✦ AT&T WorldNet Service is the #1 Internet access provider
- ✦ 93.5% of WorldNet customers successfully dial into the service on their first try, compared with average industry rate of 86.8%
- ✦ AT&T Easy-Commerce Service makes electronic commerce as easy as calling a toll-free number
- ✦ AT&T Japs in Japan was the first country outside of the U.S. to launch WorldNet
- ✦ AT&T plans to invest a substantial part of its announced \$8 to \$9 billion in capital expenditures this year to expand and upgrade its network and to introduce sophisticated new services.



<PTC 1997 Mid Year Seminar >

## Requests to Telecom Carriers

June 3, 1997

TOYOTA MOTOR CORPORATION

## CONTENTS

1. TOYOTA Overview
2. Toyota Global Network Configuration
3. Toyota Global Network Future Plans
4. Issues for Network Installation
5. Requests to Network Carriers

Toyota Motor Corp. System Planning Div.

## 1. TOYOTA Overview

- (1) Established August 28, 1937  
 (2) Head Office 1 Toyota-cho, Toyota City, Aichi Prefecture, Japan  
 4-18, Koraku 1-chome, Bunkyo-ku, Tokyo, Japan  
 (3) Main Business  
 • Manufacture and sale of automobiles, industrial vehicles, ships, aircraft, other transportation machinery, aerospace machinery, parts, and components.  
 • Manufacture and sales of prefabricated housing unit and home-related equipment.  
 • Development, sales, lease of softwares about management of information, network service and offers of information  
 ¥9,104,792 million (\$81,293,000 thousand \*3)  
 ¥ 303,312 million (\$ 2,708,143 thousand \*3)  
 ¥ 354,657 million (\$ 3,166,580 thousand \*4)  
 70,000 ( as of March 1997 )

\*1 April 1996 - March 1997

\*2 As of March 1997

\*3 At the rate of ¥112=US\$1

\*4 At the rate of ¥112=US\$1, the approximate exchange rate on the Tokyo Foreign Exchange Market on March 1997

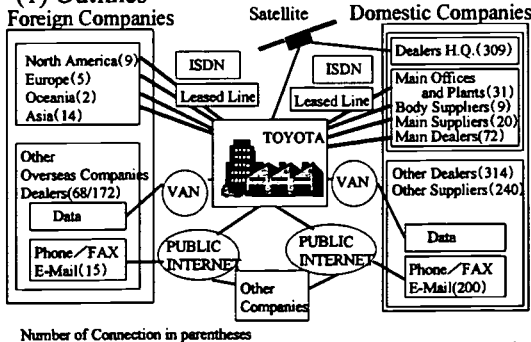
Toyota Motor Corp. System Planning Div.

TOYOTA Information and Communication SyStem -Video-

Toyota Motor Corp. System Planning Div.

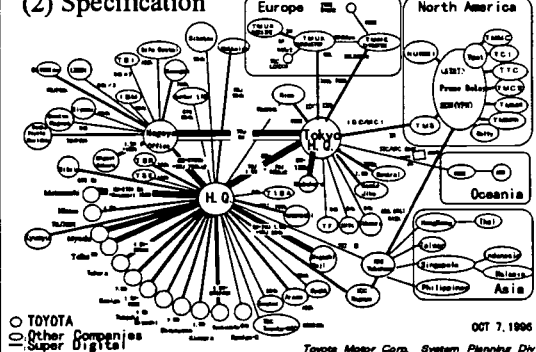
## 2. Toyota Global Network Configuration

### (1) Outlines



## 2. Toyota Global Network Configuration

### (2) Specification



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### 3. Toyota Global Network Future Plans

#### (1) Performance of the Network

Current : Existing Network is Adequate the Limited Area



Future Growth : Requires Upgrade on a World-Wide Bases

\* Difference in time, World Wide Routing etc.

Toyota Motor Corp. System Planning Div.

### 3. Toyota Global Network Future Plans

#### (2) Flexibility of the Network

Current : Advanced Network at the time of Installation

\* Hard to adopt Newest Technologies



Future Growth : Flexible Network to Incorporate Newest Technologies

Toyota Motor Corp. System Planning Div.

### 3. Toyota Global Network Future Plans

#### (3) Objectives of the Network

Current : Cost Saving Network



Future Growth : Strategic Network for the Company for the 21st Century

\* Close relation with the plan of sales and production

Toyota Motor Corp. System Planning Div.

### 3. Toyota Global Network Future Plans

#### Expansion of Global Toyota Network Plans

Middle and Near East

Latin America

Africa etc.



Toyota Motor Corp. System Planning Div.

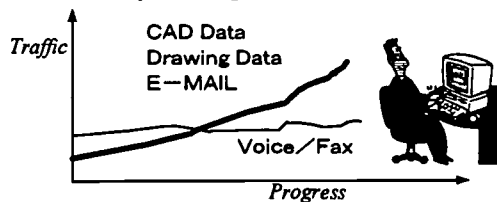
### 4. Issues for Network Installation

#### (1) Ability of Network

Needs for Wide Bandwidth and High Speed Network

Rapid Increase of Data Traffic on IP Network

→ Frequent Change of Bandwidth



Toyota Motor Corp. System Planning Div.

### 4. Issues for Network Installation

#### (2) Installation Lead-time, Standardization

① Reduction of Network Installation Lead-time

Needs for new network as an Infrastructure according to the company's business plan

② Needs of Standardized Communication

Infrastructure

Global communication as worldwide supply system



Toyota Motor Corp. System Planning Div.

4. Issues for Network Installation  
(3) Operations and Services

①Needs for High Reliability of Network Infrastructure  
Timely production after a receipt of orders  
Real-time Data communication  
→ High reliability is critical

Toyota Motor Corp. System Planning Div.

4. Issues for Network Installation  
(3) Operations and Services

②Needs for Highly Reliable Security System  
Confidentiality requirements / trade secrets

Regular Access

Security Breach

Stop!

Toyota Motor Corp. System Planning Div.

4. Issues for Network Installation  
(3) Operations and Services

③Needs for One-Stop Shopping/Billing  
Much workload of office routine

Toyota Motor Corp. System Planning Div.

4. Issues for Network Installation  
(3) Operations and Services

④Needs for Out-Sourcing Services  
Network Management / Maintenance / Disaster Recovery

Trouble

Trouble

Trouble

Trouble

Trouble

Trouble

Trouble

Trouble

Trouble

Crash!

Network Management Console

Toyota Motor Corp. System Planning Div.

4. Issues for Network Installation  
(3) Operations and Services

⑤Cost Saving

Downward pricing pressures  
between domestic and foreign carriers

Toyota Motor Corp. System Planning Div.

4. Issues for Network Installation  
(4) Consultation

Lack of Local Information in Each Country

- Regulations, TAX etc.
- Infrastructure in each country (Frame Relay, ISDN etc.)
- Support for Communication Equipments

Toyota Motor Corp. System Planning Div.

## 5. Requests to Telecom Carriers

### (1) Flexible Services of Network

Easy Expansion of Bandwidth

- Short Time Migration
- Simple Procedure
- Specification of Migration Term



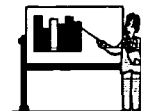
*Toyota Motor Corp. System Planning Div.*

## 5. Requests to Telecom Carriers

### (2) Cost Saving

Lowest Possible Service Price to be Competitive

### (3) Improvement Carrier's Consultation Services



*Toyota Motor Corp. System Planning Div.*

## 5. Requests to Telecom Carriers

### (4) Improvement of Reliability of Network

- ① Quality
- ② Quick Response
- ③ Network Management

### (5) Simplify Procedures and Accounting

Adoption of One-Stop Billing/Shopping Service

### (6) Efforts to Lift Restrictions

- ① Request to the Government
- ② Public Line - Leased Line - Public Line Connection to Any Countries

*Toyota Motor Corp. System Planning Div.*

## TELECOM CARRIERS



*TOYOTA MOTOR CORPORATION*

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# Network System in Banking Industry

- ◆ Recovery from Non-Performing Loans
- ◆ "Big Bang" in Japanese Financial Market
- ◆ Freer Competition & Tighter Monitoring
- ◆ Networking in Japanese Industry
- ◆ Banking Network

IBJ

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- ✓ Internet Technology → Intranet, Extranet
- ✓ Networked PCs → Network for ALL
- ✓ Groupware → Enterprizeware
- ✓ Open Computing → End User Computing
- ✓ System Integration → Desktop & Legacy  
Transparency

**Networking with high speed LAN & WAN**

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# Networked Economy & Banking

- ✓ PCs, Local Area Network, Down Sizing
- ✓ Automatic Teller Machine (ATM) Network
- ✓ Largest ATM Network in the World
- ✓ Focus on Big Bang
- ✓ Customer, New Financial Service

IBU

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# Banking and IT

	Impact	Actions	Systems
Big Bang	Less Regulation More Competition New Rules	Diversification New Products Group	Massive Data Multi-Media 24 Hours Non Stop
Society Change	Direct Finance Huge Asset Pension	Global Strategy Information Tech Risk Management	Powerful global network infrastructure
Technology Change	EG NG	Internet Banking	



# Network

- ✓ Network's utility
- ✓ Too expensive pricing in Japan
- ✓ "Big Bang" in Global Telecom Industry
- ✓ How to be Globally Competitive?
- ✓ Additional New Value Added Services

IBJ



# Expectation

- ✓ Activity Based Costing
- ✓ Network Management and Control
- ✓ Optimization of Networking Cost
- ✓ Internet Technology
- ✓ Secure Communication Infrastructure

IBM



# Conclusion

- ✓ Freedom to be competitive
- ✓ New Business Opportunity
- ✓ Quality Service
- ✓ Transformation to Solution Provider

1161

# Platform and Equipment for Multimedia Network and Its Applications

<PTC 1997 Mid Year Seminar>

Global Network Society: Business Opportunities and Challenges

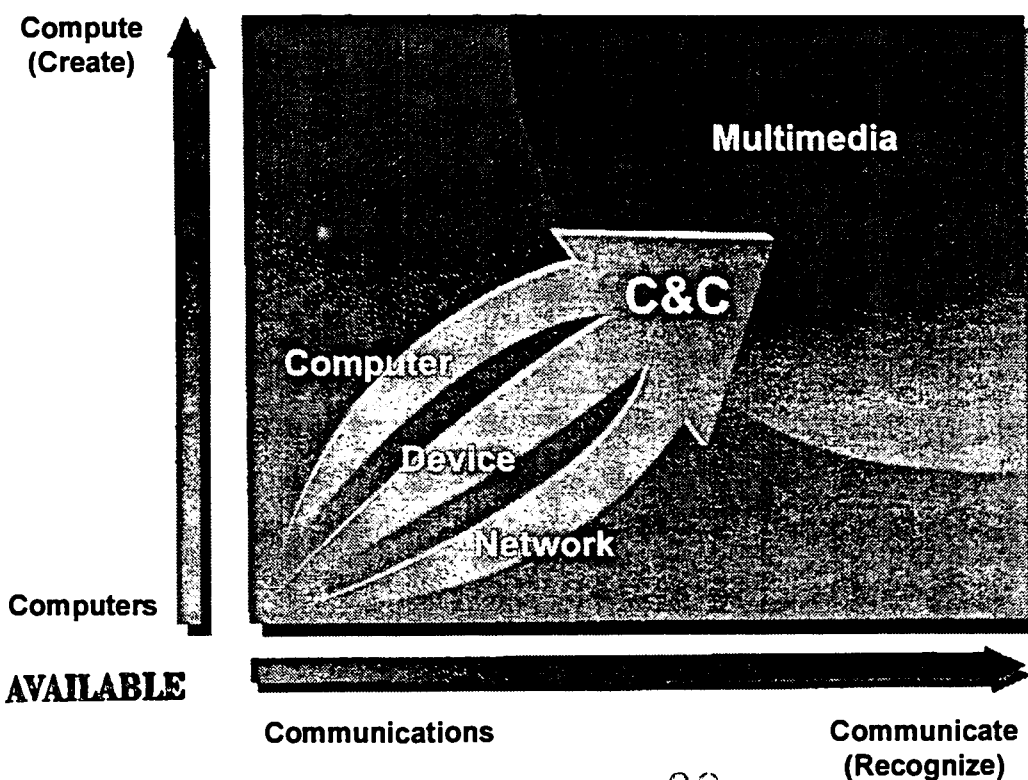
June 4, 1997

Eiichi Yoshikawa  
Senior Vice President  
NEC Corporation

E-mail : yosikawa@mmj.ho.nec.co.jp

## DEVELOPMENT OF C&C TECHNOLOGIES AND MULTIMEDIA

**BIGLOBE**



# WORLD ELECTRONICS SUPPLIERS RANKING

**BIGL BE**

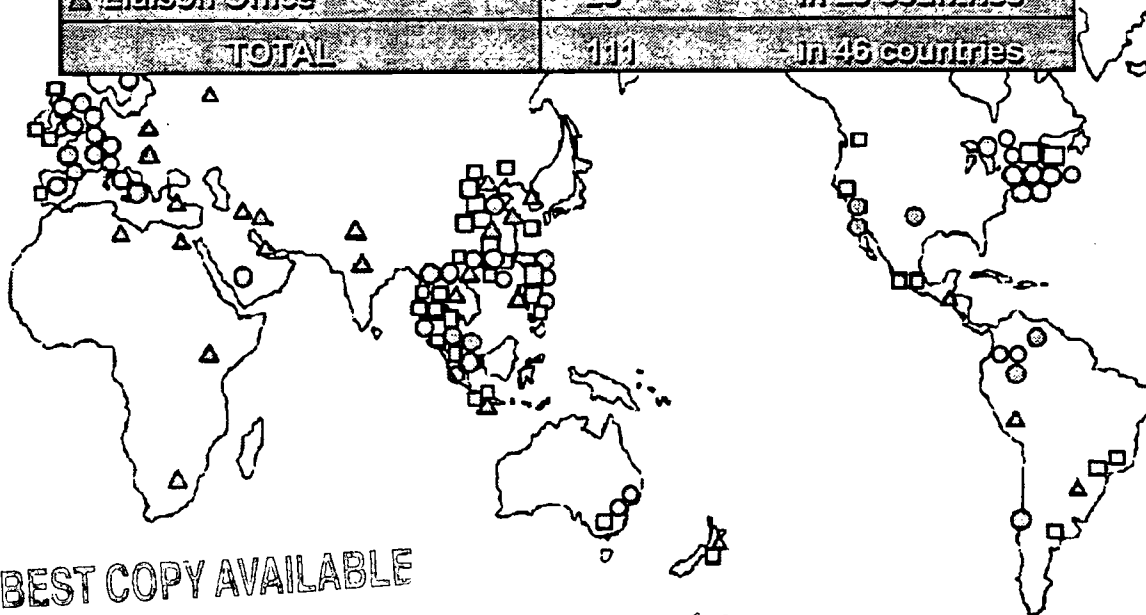
(Sales: Billion \$)

	Telecommunications			Computers			Semiconductors	
	Company	Sales		Company	Sales		Company	Sales
1	Alcatel	20.1	1	IBM	71.9	1	Intel	13.2
2	Lucent Technologies	18.4	2	Fujitsu	26.8	2	NEC	11.3
3	Ericsson	15.8	3	Hewlett-Packard	26.1	3	Toshiba	10.1
4	Motorola	14.4	4	NEC	19.4	4	Hitachi	9.1
5	NEC	12.3	5	Hitachi	16.2	5	Motorola	8.7
6	Siemens	11.7	6	Compaq	14.8	6	Samsung	8.3
7	Nortel	8.9	7	Digital	14.4	7	TI	7.8
Source:Probe Research '95			Source:Datamation '95			Source:Dataquest '95		

## NEC WORLDWIDE (As of Jul., 1996)

**BIGLOBE**

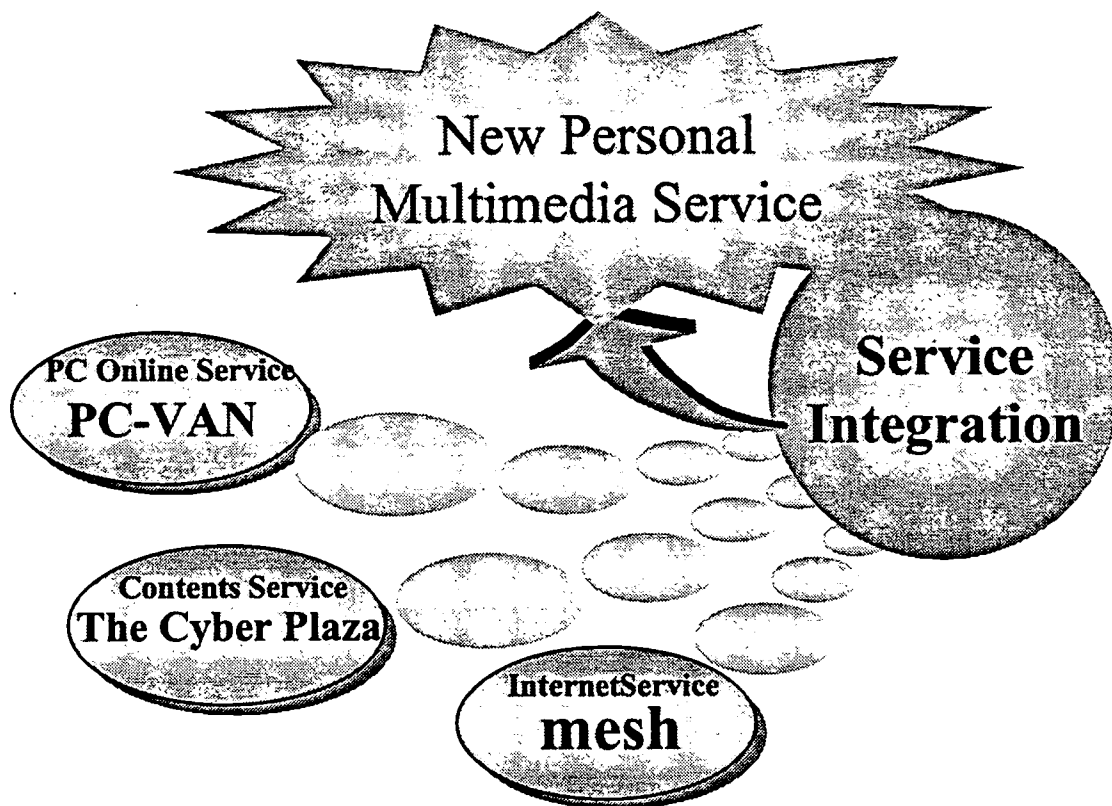
■ Manufacturing affiliate	33 (40 Plants)	In 18 countries
○ Marketing & Service affiliate	43	In 21 countries
▲ Liaison Office	25	In 23 countries
<b>TOTAL</b>	<b>101</b>	<b>In 46 countries</b>



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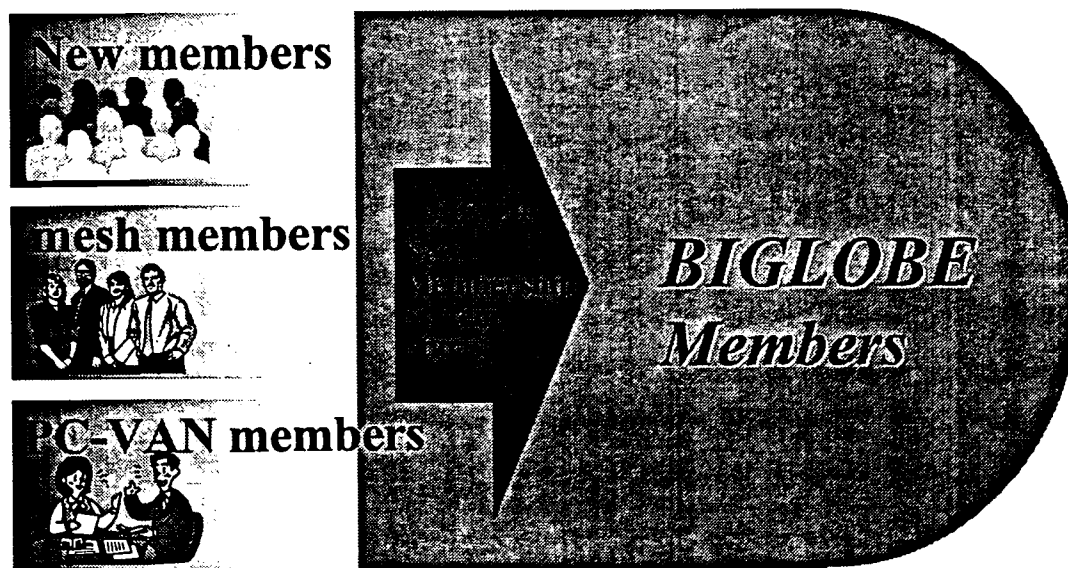


# Direction of NEC's Personal Online Service **BIGL BE**



## **BIGLOBE Membership System** **BIGL BE**

*PC-VAN, mesh members become BIGLOBE members*

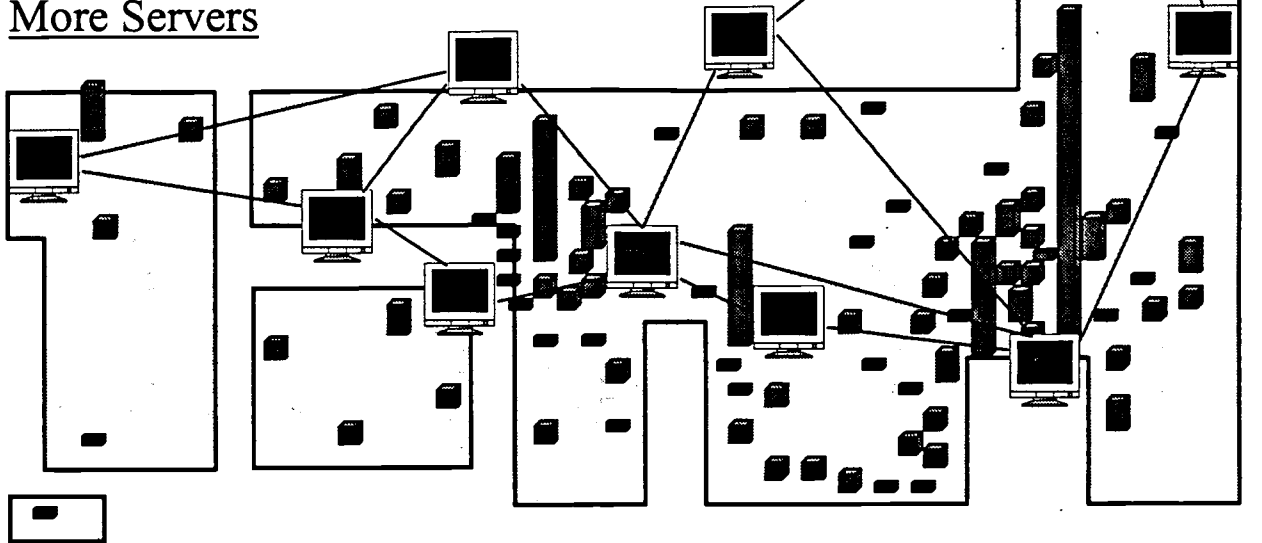


# Building a Better Infrastructure

Over 100 PPP Internet Access Points

About 200 PC-VAN Network Access Points

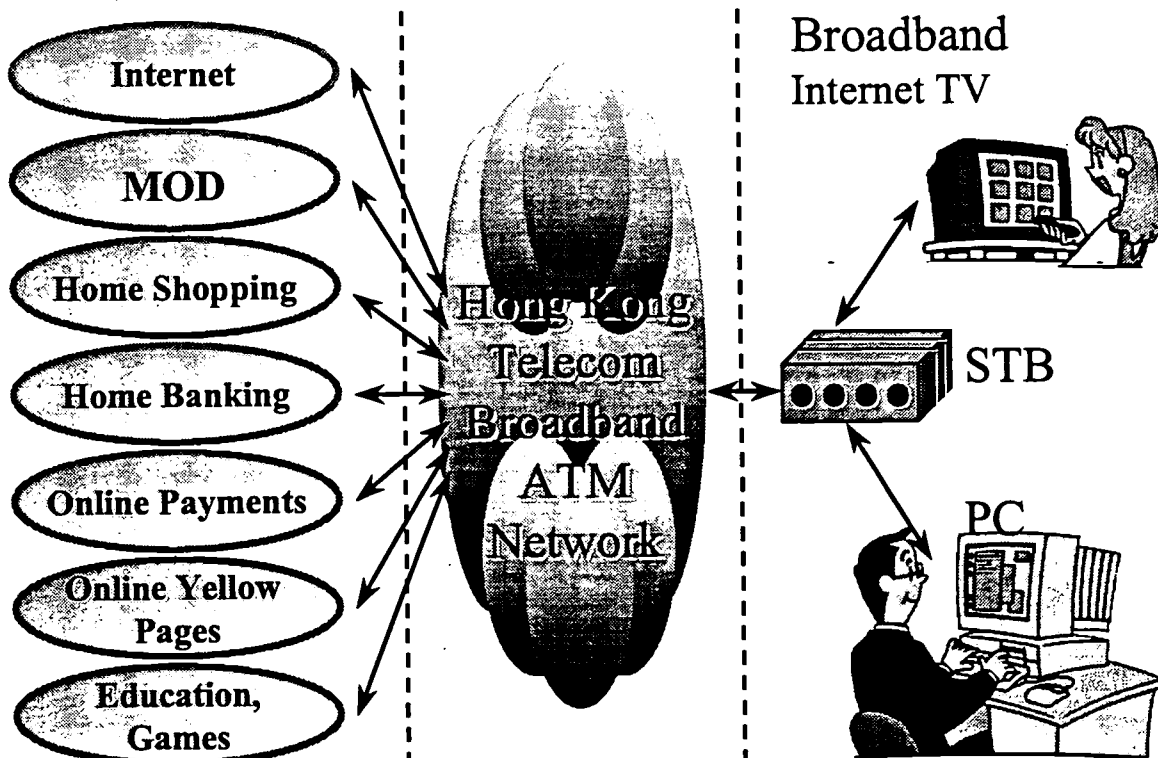
Increasing Speed with  
More Servers



# Overseas Activities

## Hong Kong Telecom Broadband MOD Network Service

BIGL BE





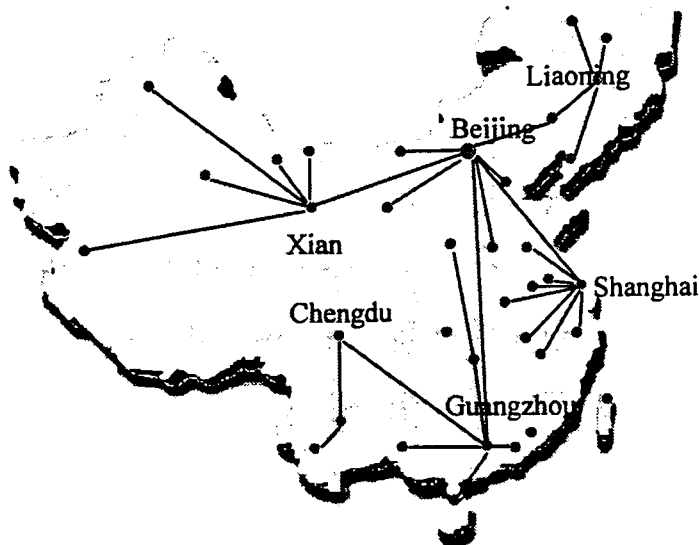
# China Economic Information Network **BIGL BE**

- *CEInet*

Center: National Information Center (Beijing)

12 Access Points Nationwide (Dec. '96)

50 APs in '97

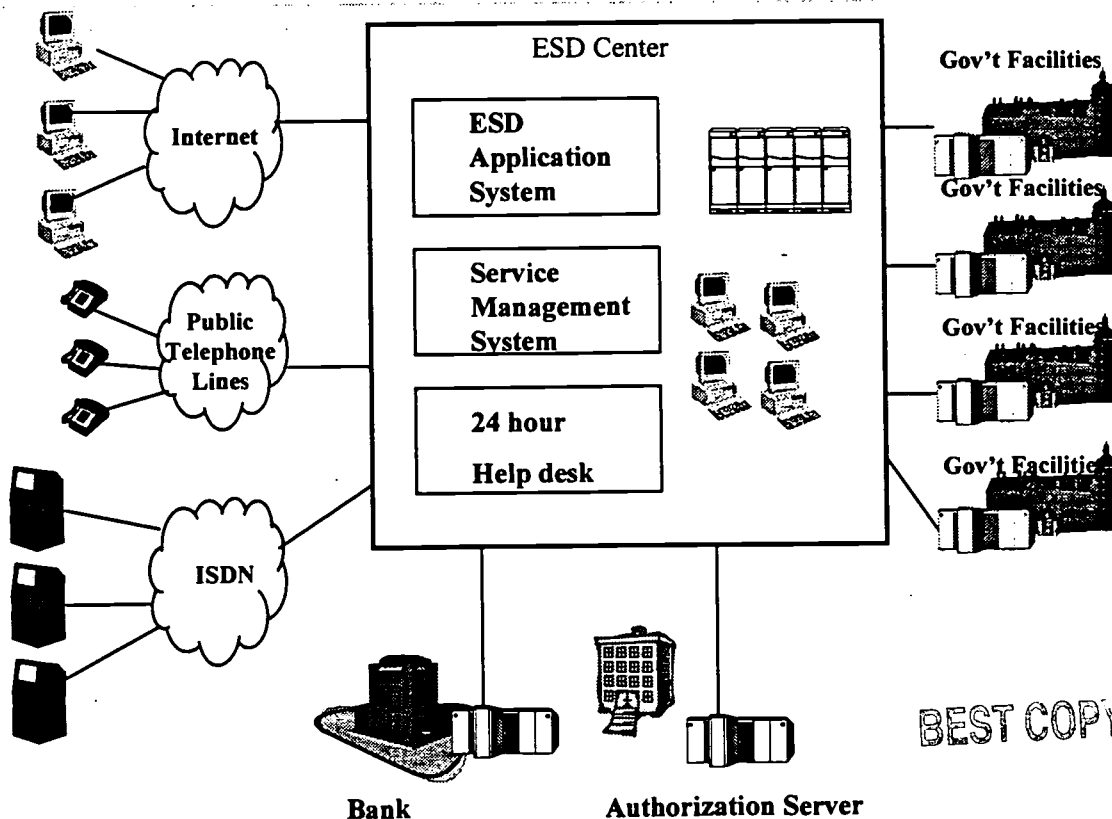


## Service Description

- Connection Service
- Contents Service
  - Chinese Economic Information
  - Real Estate Information
  - Investment Opportunities
  - Chinese Legal Regulations
  - Useful Lifestyle Information

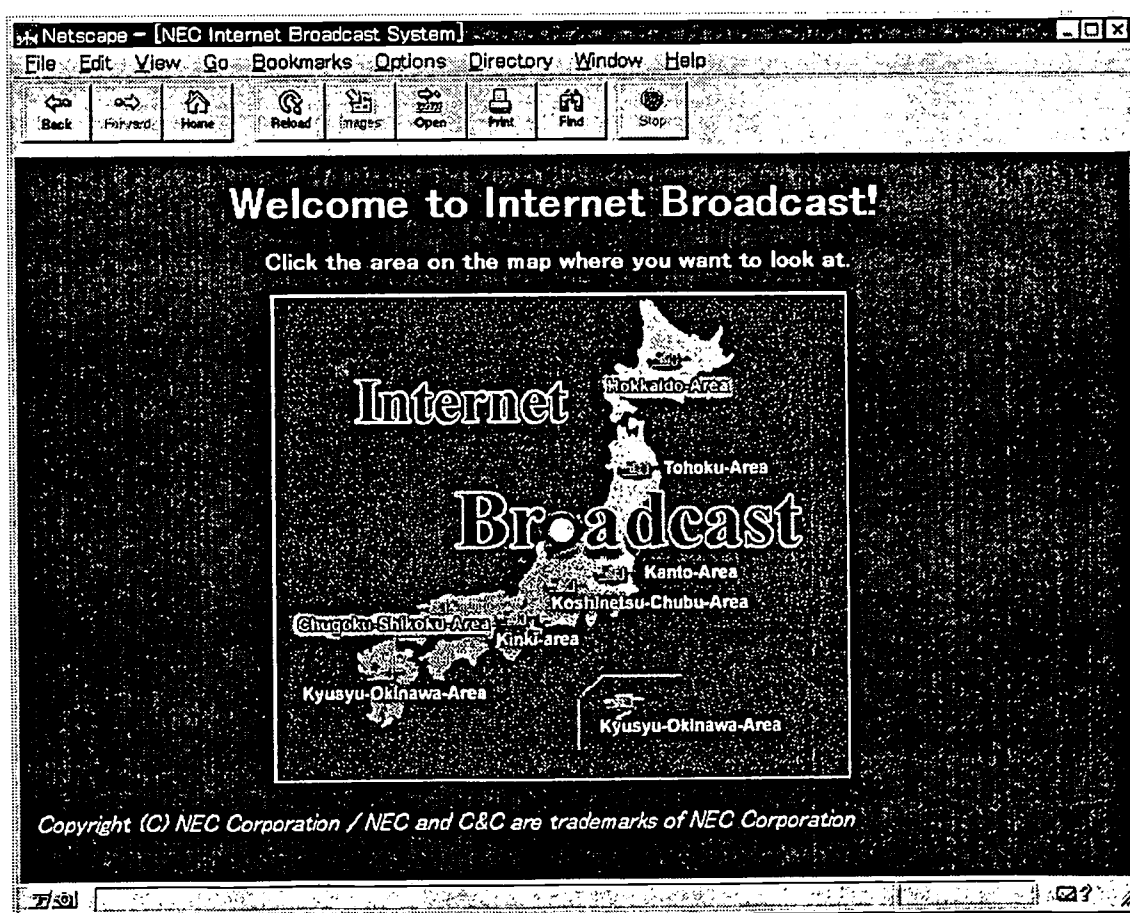
## Victoria, Australia Public Service Network(ESD)

**BIGL BE**

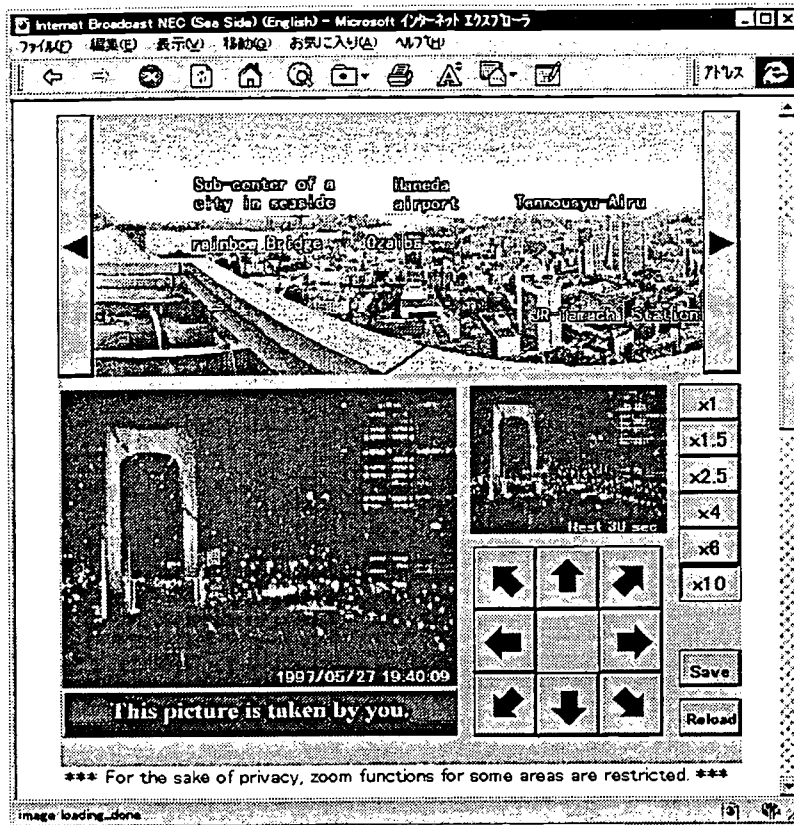


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# Internet Broadcasting



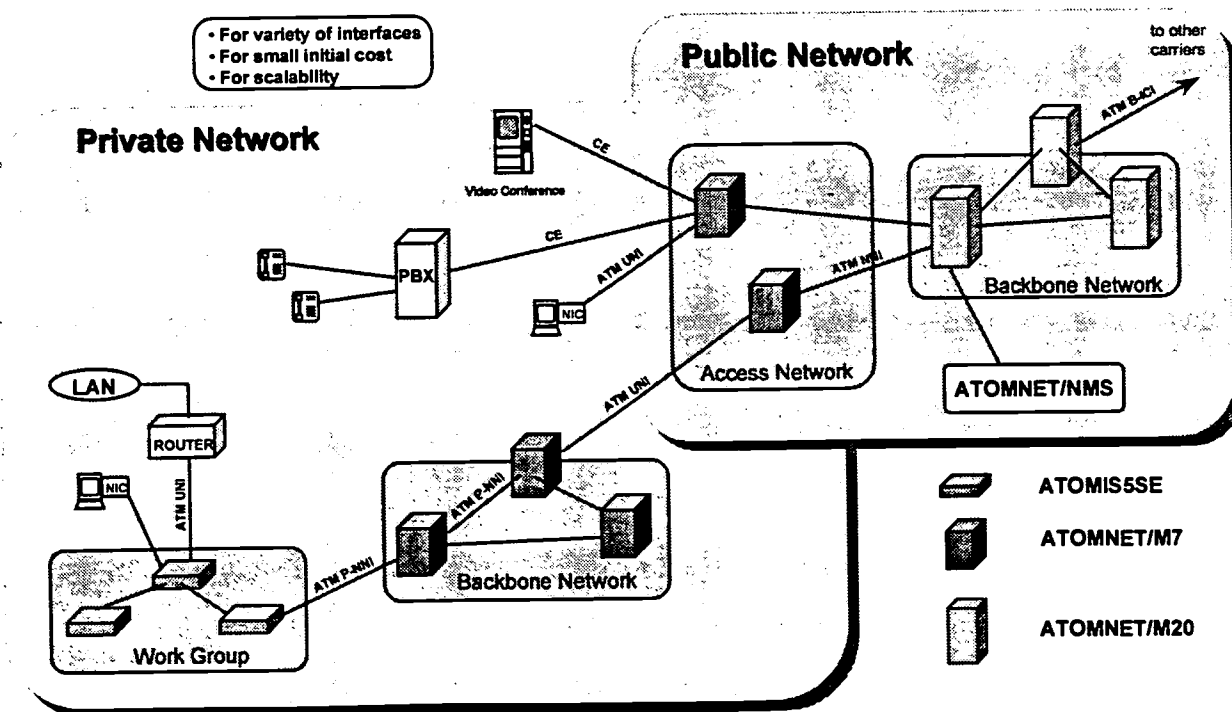
BIGL BE



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# Multimedia System & Stations

## ATM SW System Line Up (1)

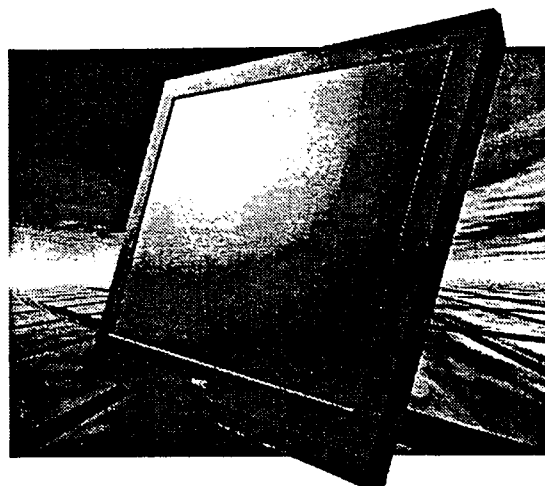
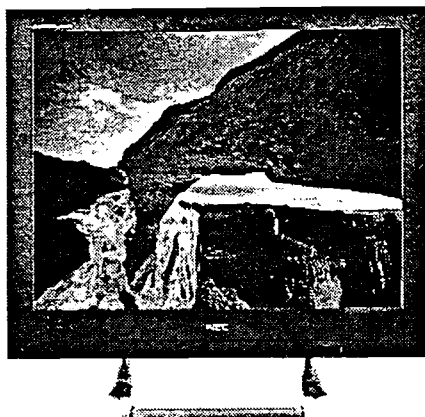


# Plasma Display Panel

**BIGL BE**

33" and 42" Color Plasma Display Panels

- Multimedia Interface (PC, HiVision, Video)
- Screen Thickness: 9.9cm

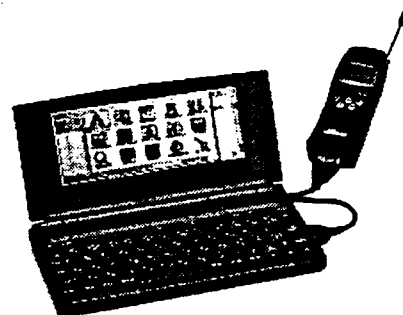


## Mobile Information Terminal

**BIGL BE**

**Mobile Gear**

- Easy Internet/Intranet  
E-mail Access On the Go
- One-touch Mail Functions
- Communicate Whenever  
and Wherever You Like



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# Edutainment

● NEC

NEC Global Network Class

# Gakkos

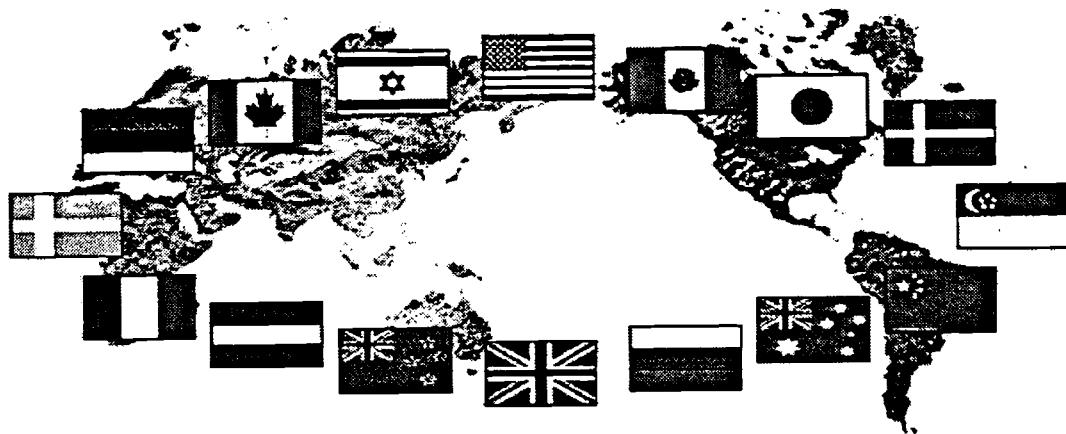


HOME

BACK

NEXT

● NEC



Currently 74 member schools in 26 countries!

HOME

BACK

NEXT

● NEC

## GAKKOS Corners

1. Science Seminar



2. Culture Seminar



3. School  
Communication  
Network

HOME

BACK

NEXT

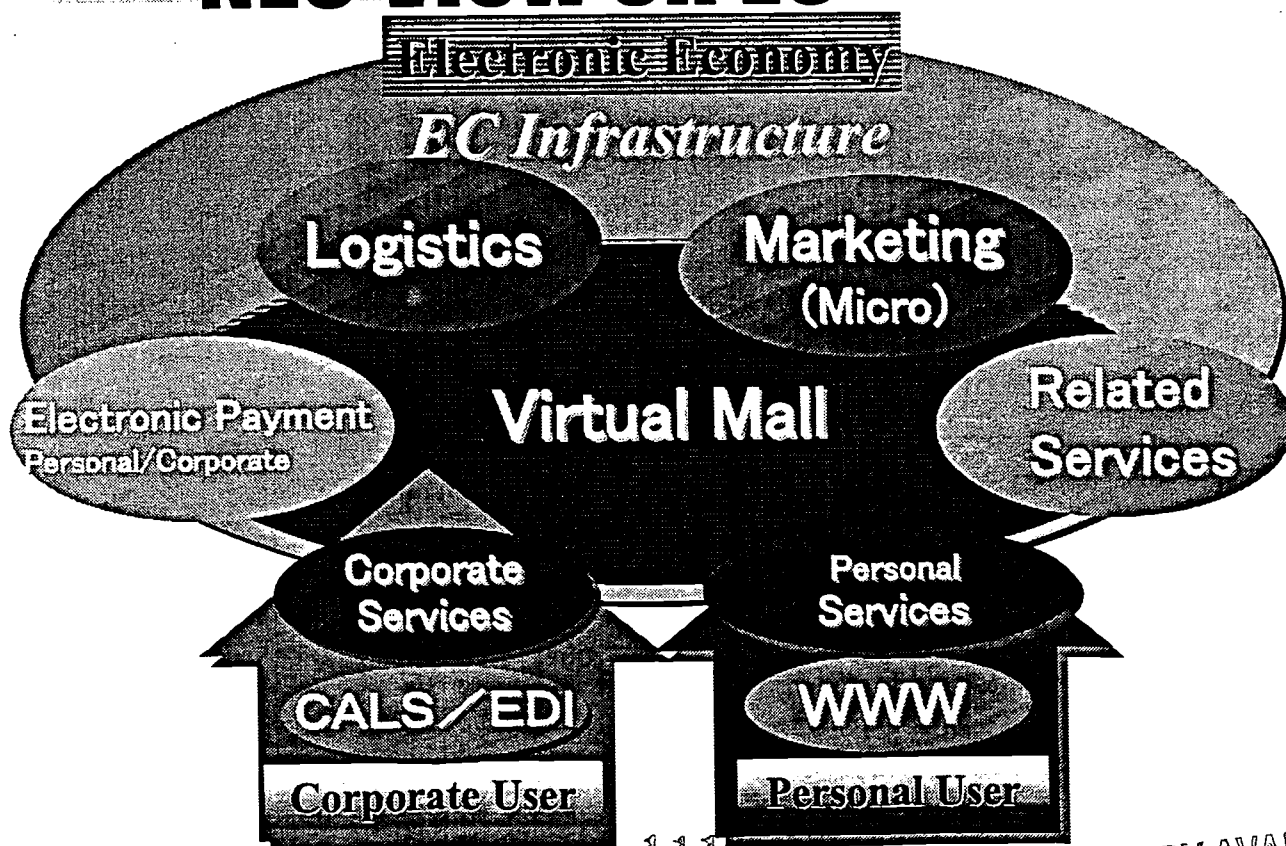


BIGL BE

# EC Promotion

## NEC View on EC

BIGL BE





1

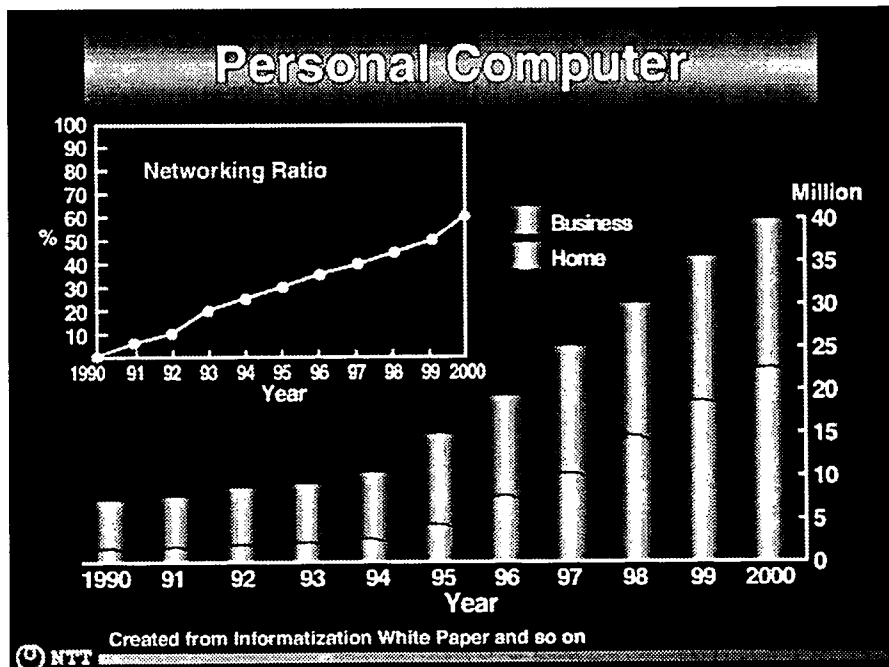
# Network Services in Multimedia Era

**Toru Adachi**

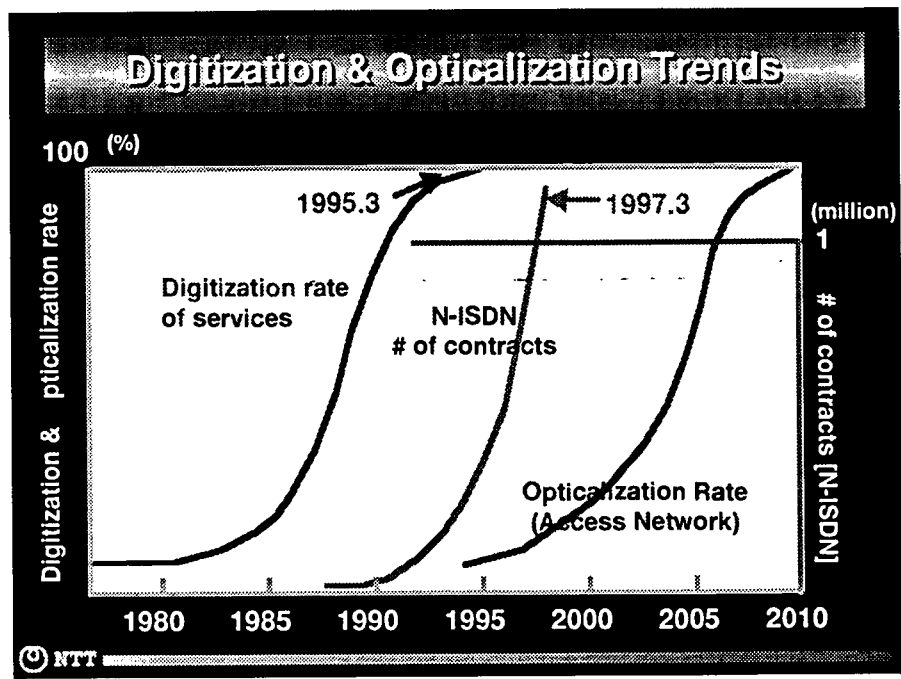
NTT Telecommunication Network Laboratory Group  
adachi@magnet.netlab.ntt.co.jp

© NTT

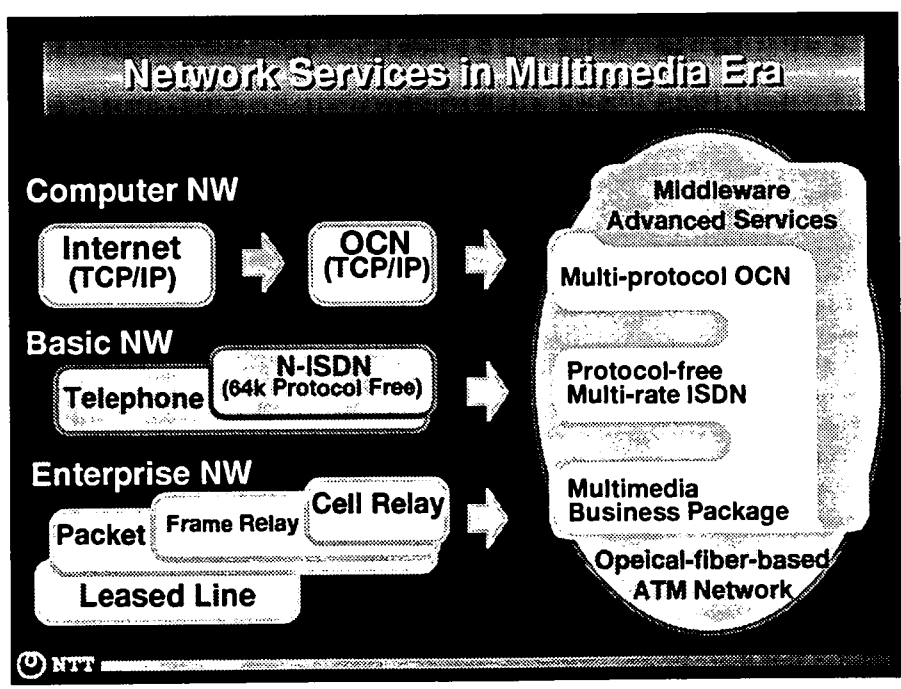
2



3



4



5

## **Progress of Multimedia Network**

**end of 1996 - OCN: 128kb/s for Mass User**

- Wide-area TCP/IP Network Service with Conventional Technologies
- Openness

**2005 (proposed) - Megamedia NW**

**Early Stage of Megamedia NW (IP Service)**

- Provide Ethernet Class Service in Wide-area NW
- Maximum 10Mb/s for Mass User  
Minimum Throughput 100kb/s



6

## **User Requirements**

1. Higher Quality
2. Enhanced Networking Capabilities
3. Economical High-Speed Access
4. Global Virtual LAN Environments
5. Large-Scale Networking Capabilities



7

## 1. Step to Achieve Higher Quality

Development Trends Quality	Best Effort → Guaranteed OCN → Megamedia NW →			
	Non-real time		Quasi-real time	Real time
Response Time	—	—	< 1 sec	< 100 msec
Bandwidth	—	Minimum throughput > 100 Kb/s	Minimum throughput > 100 Kb/s	Guaranteed 10 Mb/s

— Non-guaranteed

Numerical values are one of examples



8

## 2. Enhanced-networking Capabilities

### Applications

- Logical Office
- Cyber-mail
- Intra-net services
- Security

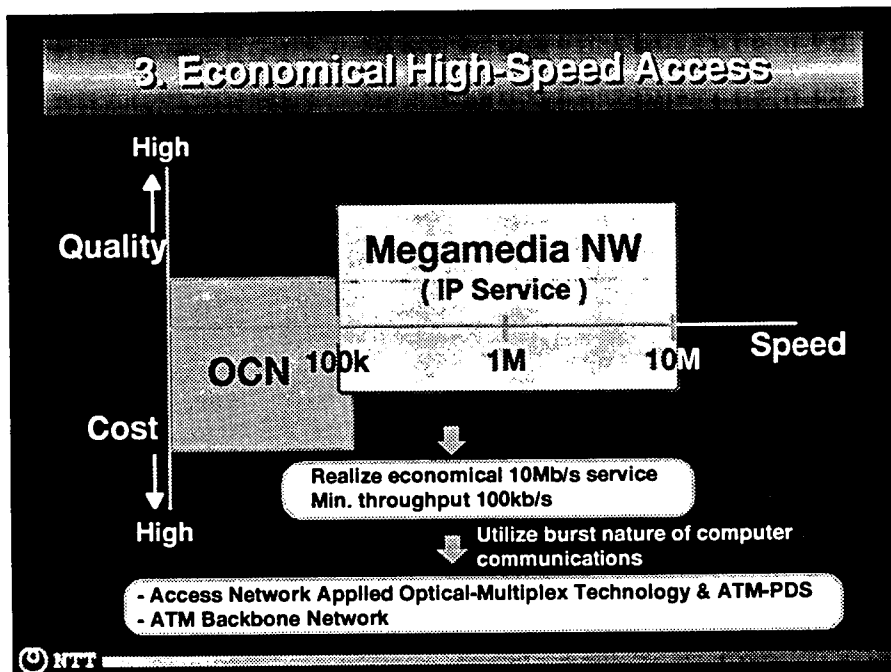
### Enhanced Network Service

	Security	Band-width Guarantee	VLAN	Multi-cast
OCN	No guarantee at network level	Can't guarantee in the full sense with RSVP/ST2	The same equipment must be implemented within a network	Hard to apply to WANs
Megamedia Network (IP/ATM)	Realize CUGs through network functions	Supportable with ATM functions	Capable of diverse services with ATM	Can be realized efficiently with ATM addresses
Simplification of Network Operation (Charging etc.)				

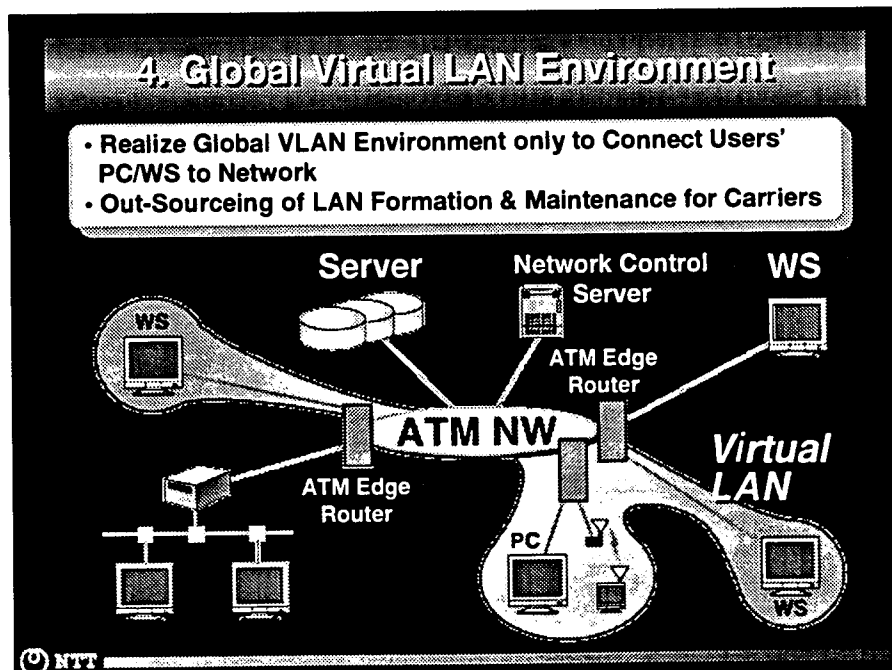


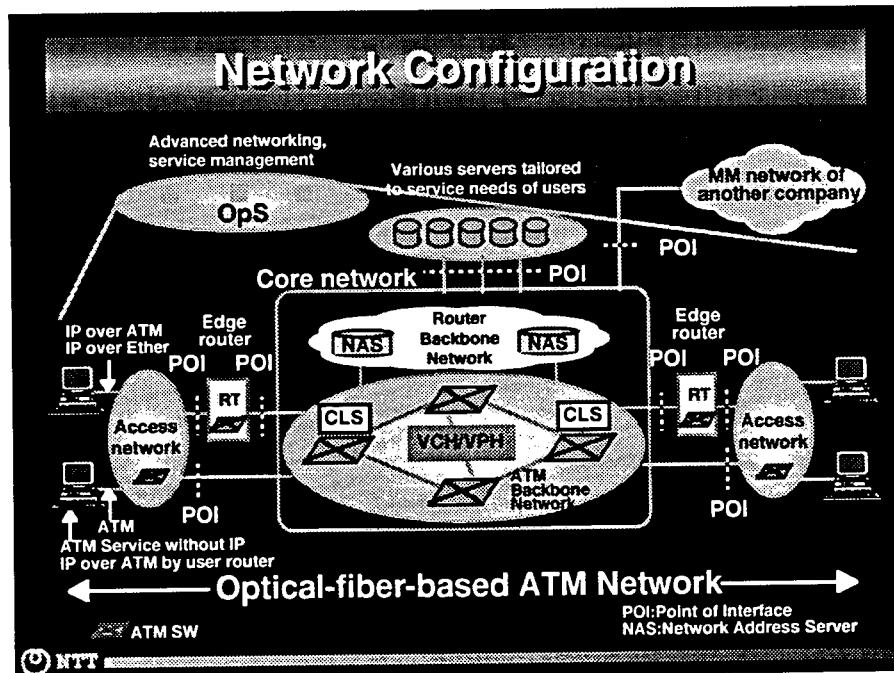
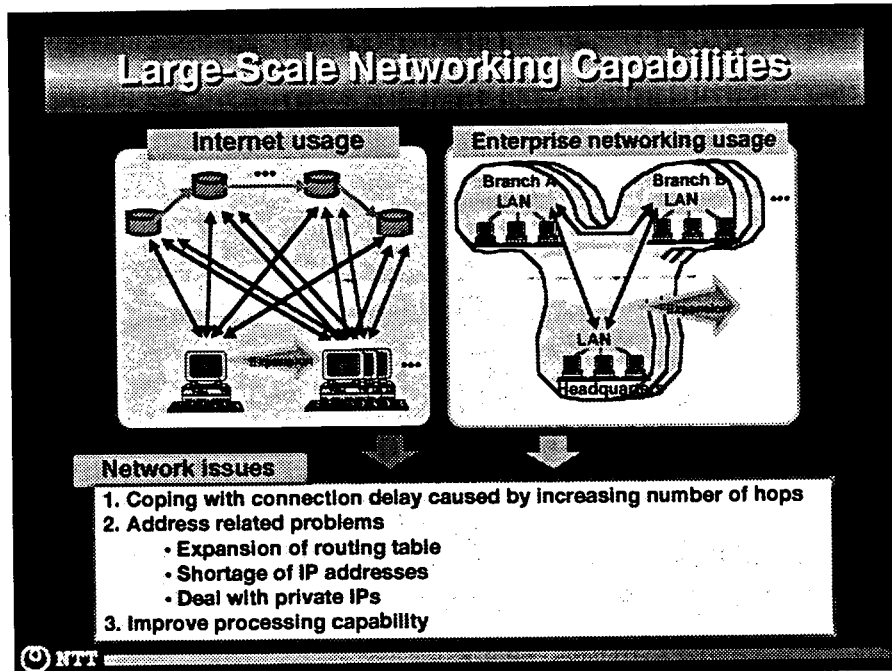
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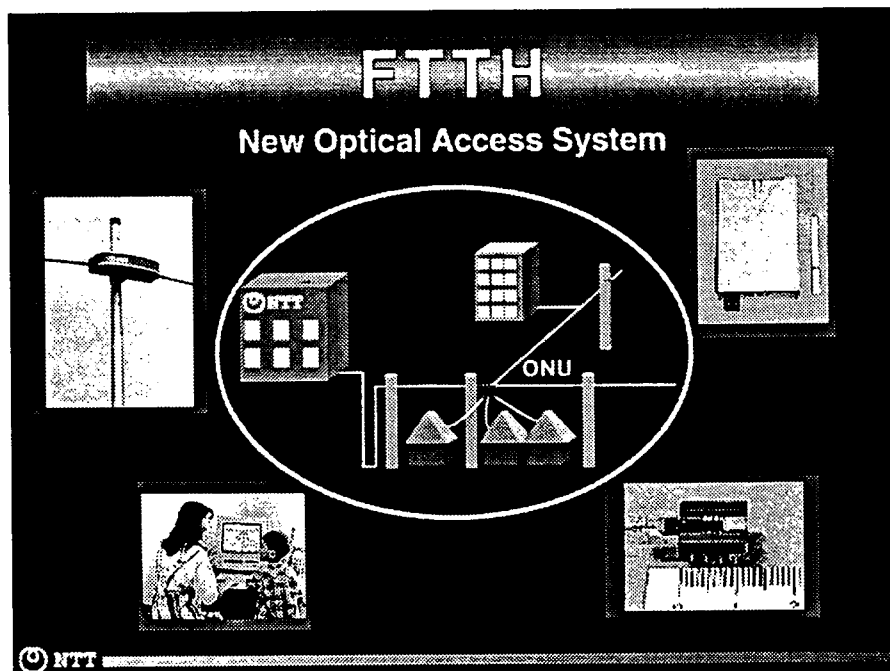
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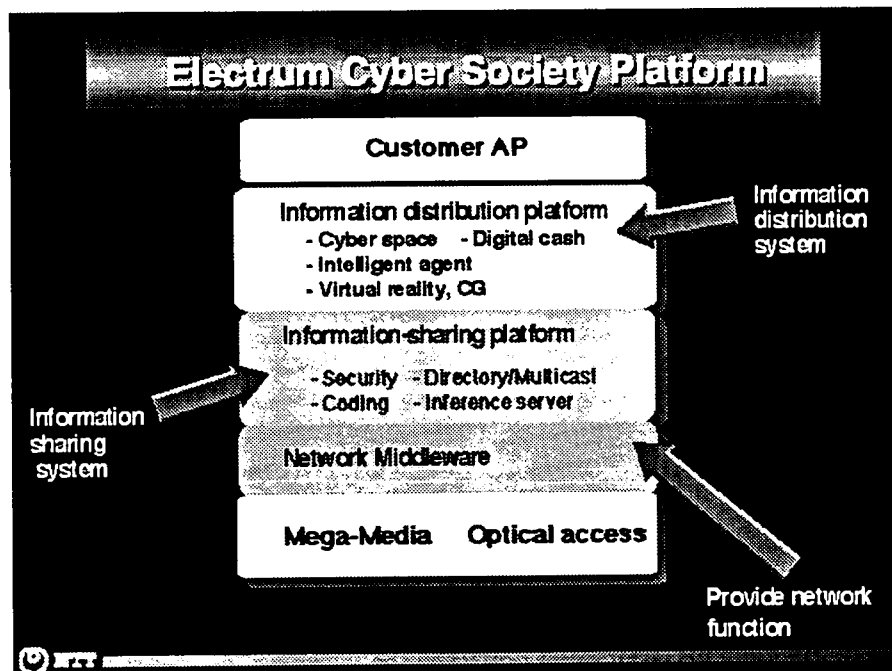




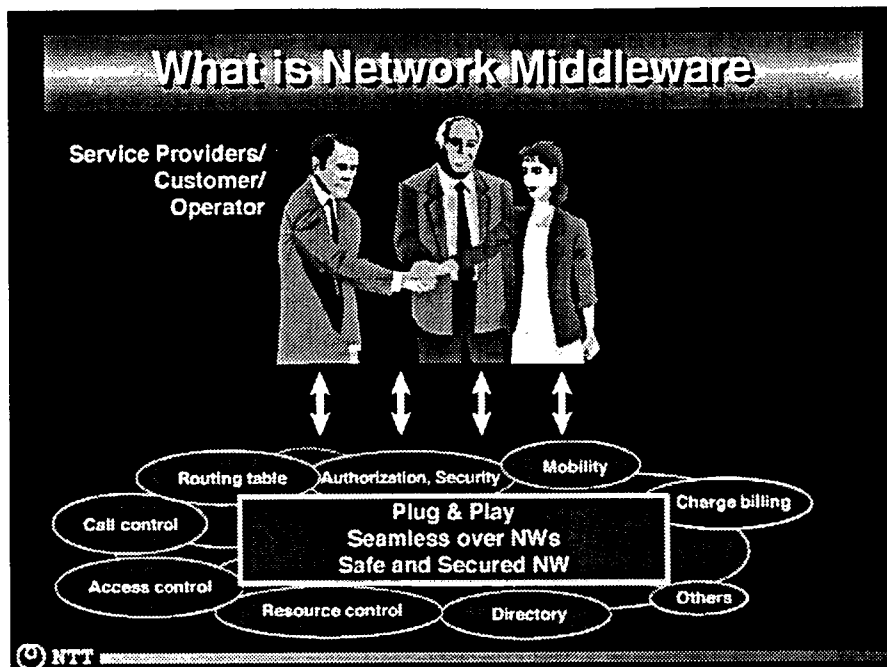
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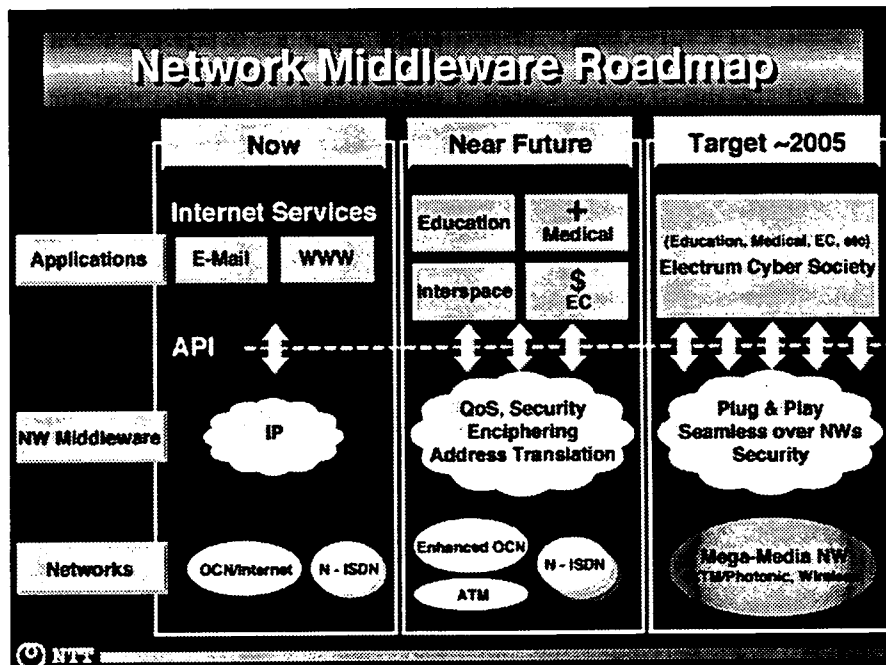
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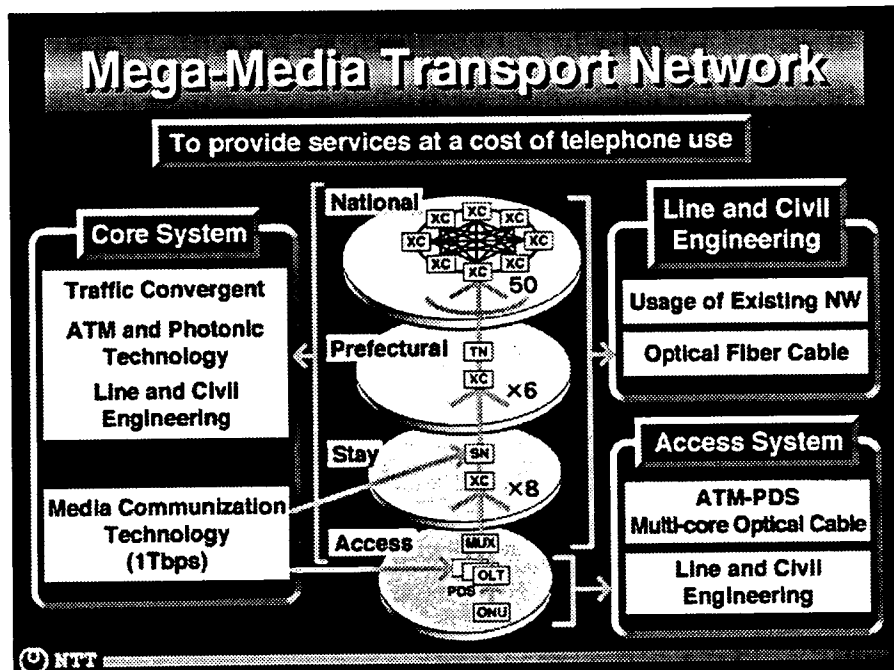
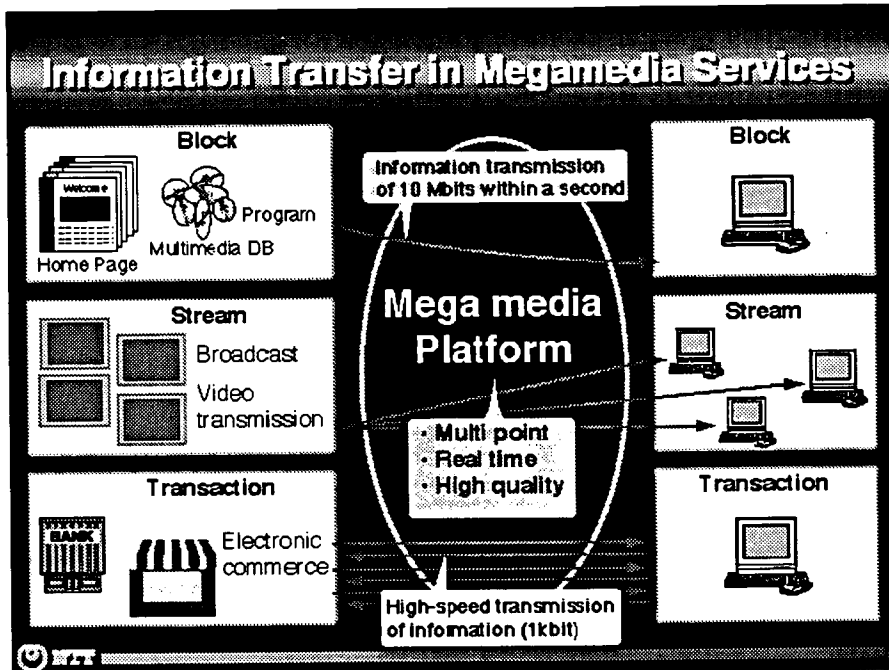
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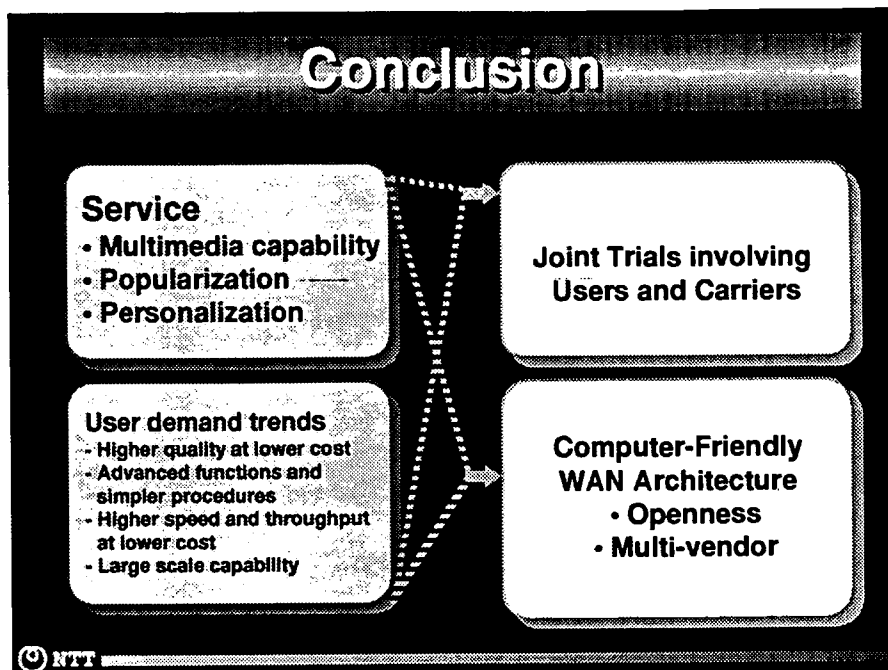


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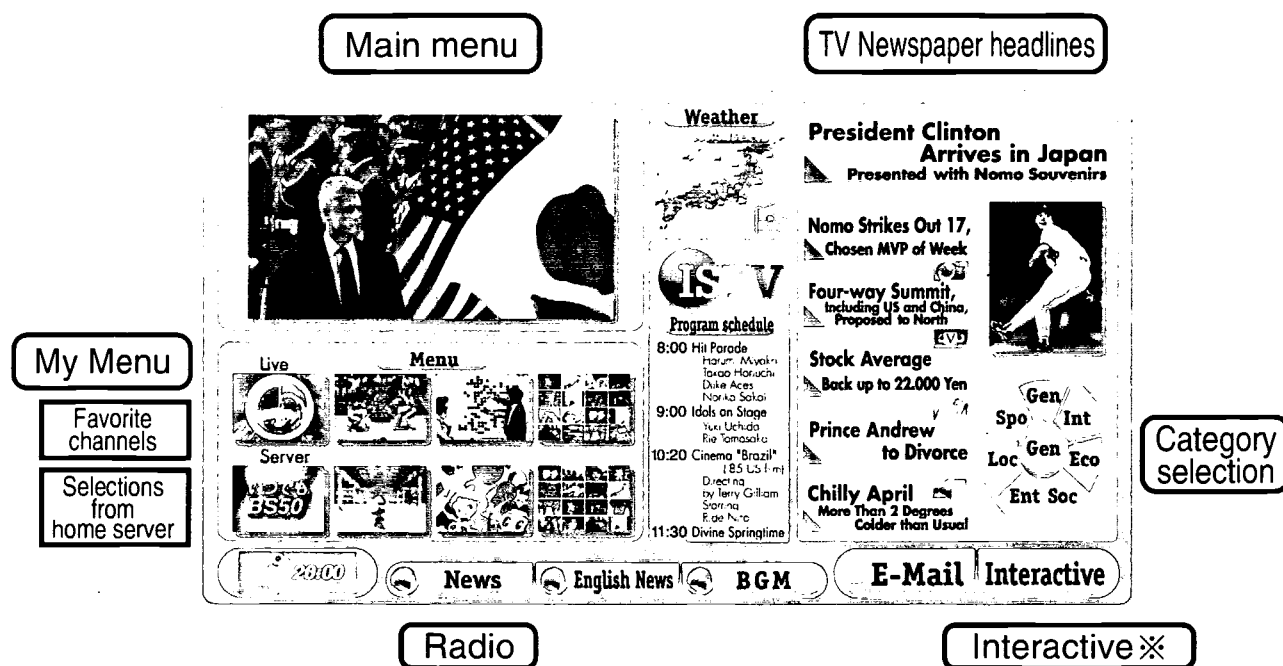








# Viewer's Service Integration (ISTV Menu Screen)



※ Additional information and interactive services can be obtained at a touch on the remote control.

## 1 Anytime functions

ISTV is to have a "built-in home server" for automatic recording and reproduction. Broadcasters can transmit stock-type programs for each day all at once, perhaps at a fixed time in the morning, and then broadcast at fixed intervals automatically updated news and weather information. Viewers can watch these at home at any time they like through a simple "home interactive" system. This is called the "anytime functions."

### Anytime news

This function allows viewers to select the latest news in a variety of ways. For example, the latest news items can be recorded automatically in the built-in home server, so that they can be retrieved with a click of the remote control on the screen icons. Headline news on the TV Newspaper can also be called up by item, by category or in full detail.

- Automatic recording and one-touch retrieval of TV news
- 24 hour headline news on the TV Newspaper
- 24 hour radio news

### Anytime weather forecasts

Viewers can acquire the latest weather information, updated automatically. By clicking "weather forecasts" on the menu screen, the latest weather information appears on the full screen, followed by local weather in detail.

### Anytime program schedule and guide

This shows a program guide on the screen, just like the contents guide of a newspaper or magazine. If a program indicated on the screen is selected, the home server records it automatically.

### Anytime video

A variety of videos can be automatically recorded and be called up on the screen at a click.

### Anytime audio

Audio programs such as radio news and music are as easily available as the TV services.

## 2 "My Menu"

ISTV will be "intelligent TV" with learning ability to memorize what individual viewers want to watch. "My menu" shows, on the small screen windows, programs currently on the viewer's favorite channels and those programs stored in the home server.

## 3 TV Newspaper headlines

The TV Newspaper shows important items, updated around the clock, by category: general, international, economic, social, culture/entertainment, local and sports. Full-length news items can then be clicked onto the screen.

# The Next Generation: The Evolution toward Integrated Services TV

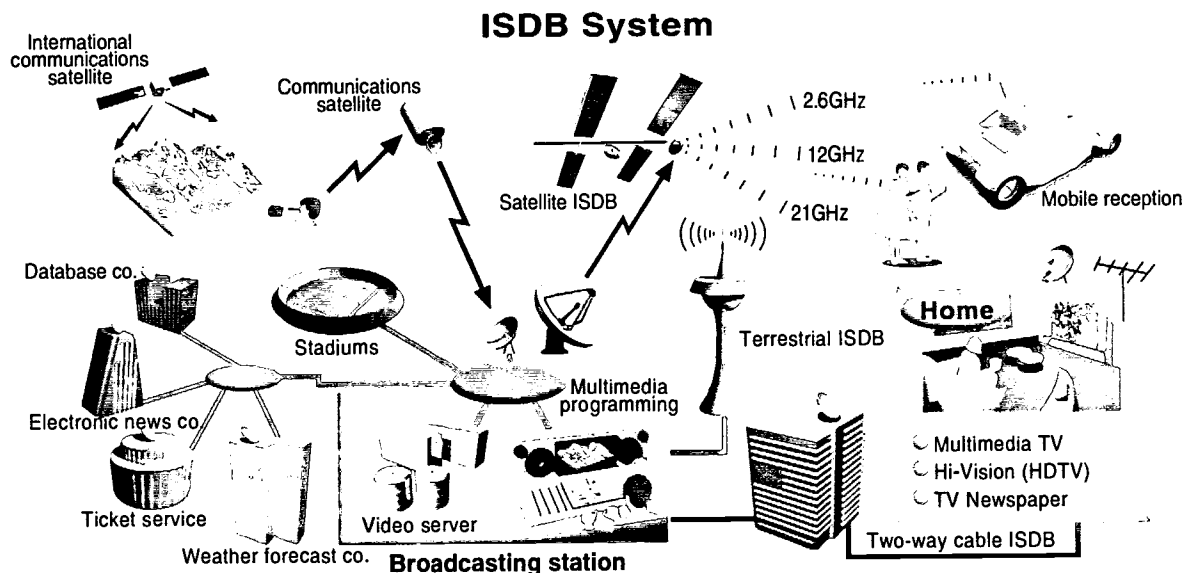
ISTV is a completely new type of intelligent TV, combining the functions of a personal computer and video deck. It is also high-definition TV, able to show exceptionally clear images and text. ISTV in the Multimedia Age will be able to provide many services through just one screen.

## Evolving TV in the Multimedia Age

TV can transmit around the clock news and other information considered important for viewers. If such an enormous amount of information can be stored in a TV set at home, TV will definitely become more attractive and accessible.

- Built-in Home Server  
Easy Interactivity at home
- Menu Screen
- Media Fusion  
Browser for All Media
- Intelligent Agent Functions

NHK is promoting the research and development of a revolutionary type of TV transmission system, known as Integrated Services Digital Broadcasting (ISDB), for the 21st century. ISTV means a receiver for ISDB.



ISDB is designed to provide fresh and versatile broadcasting services. It will incorporate many different media, including satellite TV, HDTV, CATV, and the Internet, and it will integrate a variety of services.

### ① Multimedia-type TV with high-definition display

ISTV is an integrated services terminal with a high-definition TV display for the home, combining computer, video storage, with communication and other functions.

### ② Media fusion (TV for inter-media use)

ISTV can connect a large variety of media to enhance viewers' convenience. The idea is to make just one TV set the node of electronic-related media coming into the home.

# **THE GLOBAL NETWORK SOCIETY: BUSINESS OPPORTUNITIES AND CHALLENGES**

## **New Applications in the Era of Convergence**

**Karl K Rossiter, Business Development Manager  
Television New Zealand Ltd  
Fax: + 64 6 753 2999 e-mail: kkr@tvnz.co.nz**

**TVNZ** Distribution

**June 1997**

## **INTERACTION BY SATELLITE**

**This presentation is about**

- **The products of the digital revolution**
- **The potential of the digital infrastructure**
- **Commercial returns**
- **New clients and customer management**
- ... through the application of new technology**

**TVNZ** Distribution

## INTERACTION BY SATELLITE

- Interactive multi-media communications
- Enhanced networking and interactivity
- Niche business and transactional services
- Selective electronic publishing
- Relevant distance education and health care
- Stimulating games and entertainment

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## THE INTERACTION INITIATIVE

### Business Market

Electronic commerce  
Information, Publishing,  
Advertising and Marketing

Finance, Banking, Trade,  
and Business services

Tele-commuting/conferencing  
Tele-medicine/veterinary  
Tele-maintenance...

Training and upskilling

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### Residential Market

Multi-choice Television  
- local & subscription driven

Music, Games, Entertainment,  
Movies, Sport, News, Internet /  
WWW, Community information

Education and Healthcare

Shopping, Travel, Banking

Directories and Advertising

Betting and Gaming



## THE INTERACTION INITIATIVE

The multimedia drivers ... for market attention



Color  
Sound  
Moving pictures  
Graphics  
Local language  
Relevant content

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## THE INTERACTION INITIATIVE

The multimedia drivers ... for WWW growth

- Color, sound, pictures, movement, graphics
- Managed and refreshed content
- Interactivity and global participation
- Smart software and plenty of hype!

Despite concerns about security, commerce on the Web exceeded \$US 500m last year

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## THE INTERACTION INITIATIVE

**E-mail has become the Internet driver  
and is replacing fax.  
(50% of international telecom traffic is fax  
- worth \$US 25 billion in 1996)**

**By the year 2000, Internet traffic is expected  
to exceed voice network traffic**

- Intelsat May '97

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## THE INTERACTION INITIATIVE

**By the year 2000, it is projected that  
one million businesses will be on the Internet,  
annual transactions will exceed \$US 5 billion,  
WWW will exceed 100 billion pages**

**It's only a very small step from the WWW to  
digital tv and multicasting which will enable  
the delivery of personalized information and  
premium content**

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- Microsoft May '97

## THE INTERACTION INITIATIVE

**Internet growth requires a doubling of  
bandwidth every three months**

**Multichannel / multimedia services exert  
similar bandwidth demands**

**The answer: Satellite capacity**

**... and the user is becoming swamped!**

**The answer: IBM's "Aglets"**

**TWZZ** Distribution

## COMMUNICATION SATELLITES

**Satellite capacity:**

**GEO Global: 172 in orbit / 81 on order  
(3600 transponders / 2100 on order)**

**GEO Asia-Pacific: 67 in orbit / 28 on order**

**LEO/MEO: 300 satellites by the year 2000**

**Ka-band satellites: 920 satellite filings**

**... capacity to meet demand**

**TWZZ** Distribution

## COMMUNICATION SATELLITES

**Satellite capacity is ideal for multimedia**

- Bypass clogged terrestrial networks
- Increase network reliability
- Provide appropriate bandwidth
- Suitable for interactivity
- Enable access to unreachable regions
- Rapid deployment

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## COMMUNICATION SATELLITES

**Satellite capacity is ideal for multimedia**

- Challenging tradition and setting trends
- Undermining PSTN (Public Switched Telephone Network)
- Combining DTH and VSAT technologies  
(Direct to Home television and Very Small Aperture Terminals)
- Introducing the new two-way Personal Interactive Satellite Terminal.

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## COMMUNICATION SATELLITES

- GLOBAL

Intelsat Intersputnik PanAmSat TDRSS

- REGIONAL

Palapa B & Palapa C Asiasat Apstar JCSat

- NATIONAL

JCSat Superbird N-Star Chinasat Insat Optus  
Thaicom Koreasat Measat

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## COMMUNICATION SATELLITES

- GLOBAL

Intelsat Intersputnik PanAmSat TDRSS  
Orion GE Americom

- REGIONAL

Palapa B & Palapa C Asiasat Apstar JCSat  
Mabuhay Agila Superbird Insat M<sup>2</sup>A ACeS  
L-Star AsiaSpace

- NATIONAL

JCSat Superbird N-Star Chinasat Insat Optus  
Thaicom Koreasat Measat IndoStar

**TMNZ** Distribution

## COMMUNICATION SATELLITES

**Satellite capacity is ideal for multimedia**

- **Interactivity is highly functional**
- **Menu, remote, or command driven**
- **No slower than a terrestrial connection**
- **Compatible with the TCP/IP protocol**
- **Enables multi tasking participation**
- **Unlimited applications**

**TWNZ** Distribution

## COMMUNICATION SATELLITES

**Satellite capacity is ideal for multimedia**

- **The multimedia industry is forcing an arranged marriage between the computer and the television set**
  - ... and the "computer tv" will emerge**
  - ... and again we will need IBM's "Aglets"**

**TWNZ** Distribution



## THE INTERACTION INITIATIVE

Managing network information overload

- Where "less" is worth more
- Where "selected" is highly valuable

... enter the IBM Aglet

a well disciplined "*designer virus*"  
that acts as your agent to track down  
exactly the information you want

**TVNZ** Distribution

## THE INTERACTION INITIATIVE

The new multichannel multimedia era:

- To / from homes, workplaces, institutions
- Using an interactive satellite terminal

Direct satellite reception  45 Mb/s

Return path to satellite  ± 19.2 Kb/s

- Driven by menu &/or command

**TVNZ** Distribution

## THE INTERACTION INITIATIVE

The new multichannel multimedia era:

- Initially an expensive "*premium*" option
- Return path transmits to a dedicated transponder capable of handling thousands of simultaneous responses
- Domestic low power satellite transmission equipment is not yet commercially available

**TWNZ** Distribution

## THE INTERACTION INITIATIVE

Achieving the interactive multimedia era:

- Japanese innovation
  - Japanese enabling technologies
  - Japanese production capability
  - Japanese focus on consumer electronics
- and therefore, interactive satellite multimedia becomes a global reality

**TWNZ** Distribution

## What dose Internet Bring to Schools?

-Internet as a Representation Media for Each Pupil-

The Board of Education, Yokohama City  
Ex-schoolteacher, Nakagawa Nishi Primary School, Yokohama

Hiroshi Nakagawa

When Internet Penetrates into a Classroom,

## What are Possible Changes and How?

### 1. Internet Changes Lessons!



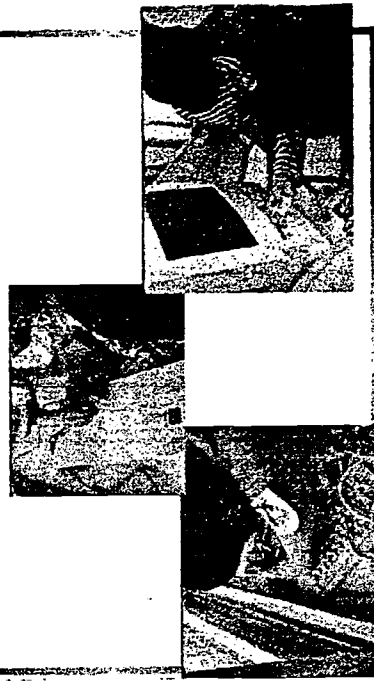
## Internet Expands Lessons Out of Classrooms



## 2. Internet Changes Teachers!



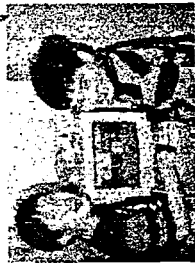
## Teachers can not Apply Traditional Common Sense



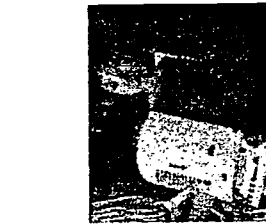
## Internet Changes Schools!



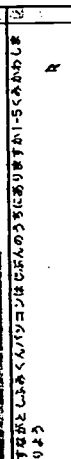
## Internet Improves Communication between Parents and School



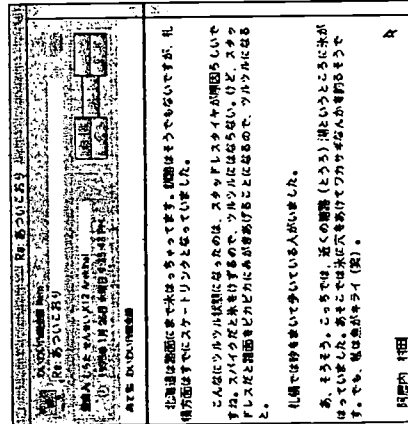
## Internet Changes Children!



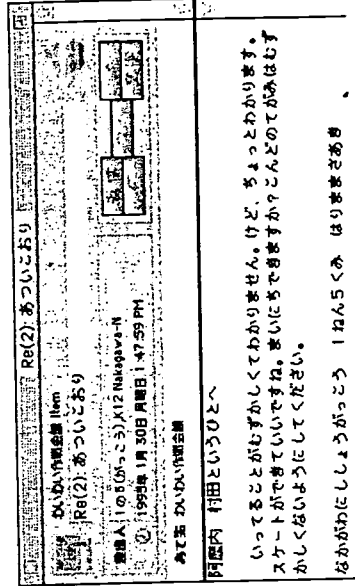
## Communicate His or Her Message to Remote Friends by a Line of Sentence!



## A Mail from a Middle School Teacher



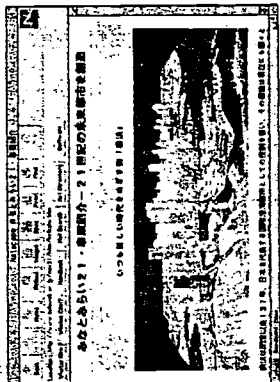
## Request Mail Written by Hiragana







## Actual Experiences are Key to Success



## Network is One Team



## Issues

1. Preparation for Network Infrastructure
2. Problems Regarding Support
3. Protection from Harmful Information

## We Feel Warmth of People on the Other Side of Network



BEST COPY AVAILABLE



# **THE BUSINESS AND LAW OF WEB COMMERCE**

Pacific Telecommunications Council  
Mid-Year Seminar  
Yokohama, Japan  
June 4, 1997

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## THE BUSINESS AND LAW OF WEB COMMERCE

### I. WHAT IS WEB COMMERCE?

#### A. Electronic commerce

1. The driving forces
  - a) Globalization of markets and competition
  - b) Supply chain management
  - c) Networks and collaborative computing
2. Electronic Document Interchange ("EDI")
  - a) Over 300 EDI "transactions sets" exist
  - b) A full-featured EDI payments transaction set exists, but is little used
3. EDI implementations have been expensive, oriented toward mainframes and manufacturing companies, and not widely adopted Electronic commerce and its rapid evolution into Web Commerce
  - (1) Three principal components of EDI
    - (a) Translation software: mapping to and from transaction sets
    - (b) Application interface software: moving transaction data into and out of company applications, esp. databases
    - (c) Communications software: transmits and receives transactions sets over a network
  - (2) EDI has been limited to registered trading partners and specialized networks
    - (a) "Overkill" for text messaging, the major use of EDI
    - (b) VAN-specific software
    - (c) Uneconomic price/performance

#### B. Computerized Reservations Systems

#### C. Interactive Voice Response

#### D. Television shopping

#### E. Online (but not World Wide Web ("Web")) commerce

#### F. Web-based commerce

1. Business to consumer: replacement of the physical store
2. Business to business: replacement of EDI, faxes, and voice calls
3. What does "Web-based" mean?

- a) Server computers on which Web pages are stored
- b) Client computers with Web page browsers
- c) A Web page uses bit-mapped pixels to present a graphical user interface to the end-user. A Web page is to the Internet as Windows is to DOS. The Web was invented in 1989 in Switzerland.
- d) Clients and servers are interconnected by the Internet
- e) Browsers cause servers to deliver Web pages for display on the browser
- f) Web pages can have static or interactive content
- g) Interactive content can be forms, searches, audio, video, etc.
- 4. A collection of Web pages on Web servers can be "virtual stores"
  - a) A collection of Web pages on a server is called a "Web site"
  - b) The first Web page in a Web site is the welcome page
  - c) Other Web pages in a Web store present products and services for sale
  - d) Information about products and services can be in "nested tiers" of pages with increasing detail and higher resolution pictures
  - e) Web customers can fill "virtual shopping carts," check out, and make secure payments
  - f) Virtual stores can be multi-lingual, and open 24 hours a day, year-round
  - g) Store owners can collect marketing data, comments, and other information from every store visitor or buyer
  - h) The Web customer base is generally well-educated and has financial credit

## II. THE U.S. RETAIL MARKETPLACE IS APPROXIMATELY \$2.3 TRILLION/YEAR

- A. U.S. direct marketing accounts for about \$64 billion to \$100 billion per year of total retailing, and is the fastest growing segment in retailing
  - 1. Direct marketing includes television shopping, mailed catalogs, and other direct mail
- B. Ninety-eight percent of U.S. households have TVs and 25% have PCs. The penetration of PCs will grow. More TVs will be Web-equipped as a standard feature.
- C. The U.S. Web Commerce market is estimated to be \$133 billion dollars (15,2950,0000,0000 Yen) in the year 2000, most of which will be business-to-business sales. Global sales will be even greater.
- D. Web-equipped TVs are now available. The Web is becoming "interactive TV." (MSNBC, WebTV) Home shopping via Web-enabled TVs, kiosks, and PCs will explode since it is a transportation-free, threat-free environment, and can address major reasons people shop:
  - 1. Loneliness and boredom
  - 2. Education/career
  - 3. Necessities
  - 4. Hedonic (for pleasure)

- E. There are three main types of shoppers:
  - 1. Impulse. Impulse purchasing accounts for between 30% (overall average) to 50% (supermarkets) of all retail purchasing
  - 2. Patient. Web stores are always open and are infinitely patient.
  - 3. Analytic. Web pages can satisfy analytic shoppers' need for information, with minimal employee involvement.
- F. There are four main types of purchases, all of which are very susceptible to "in-store influences" in the following order of increasing influence:
  - 1. Specifically planned (not easily influenced)
  - 2. Generally planned
  - 3. Reminder
  - 4. Unplanned (very easily influenced)
- G. Successful Web Commerce satisfies the principal shopping criteria of:
  - 1. Convenience
  - 2. Control
  - 3. Low price
  - 4. Value
  - 5. Quality
  - 6. Uniqueness
- H. The most successful Web Commerce sites meet the principal shopping criteria and reflect an upscale market
  - 1. <http://www.amazon.com> ("the best bookstore in the world")
  - 2. <http://necxdirect.necx.com> (computers and computer components)
  - 3. <http://www.cdnow.com> (compact disks - audio)
  - 4. <http://www.internet.net> (Internet Shopping Network, computers)
- I. Web Commerce is in its infancy. Microsoft's first web commerce software, Merchant Server 1.0, shipped in late October, 1996. Web Commerce presents an unprecedented opportunity for remote vendors to reach global markets, regardless of the size of the vendor.

### III. THE BASIC COMPONENTS OF A WEB COMMERCE SITE

- A. Component 1: Full-time, high-speed access to the Internet Backbone
  - 1. The Internet Backbone is on the U.S. mainland, and still has "academic roots," but is now predominately commercial
    - a) Virtual stores should be as close as possible (in terms of transmission time) to a major network access point. There are five major network access points, Santa Clara, Calif. (Metropolitan Area Exchanges-West ("MAE-West")), Washington, D.C. (MAE-East), PacTel-San Francisco (actually, in Fresno), Ameritech-Chicago, and Sprint-New York (actually in Pennsauken, NJ).
      - (1) A "network access point" or "NAP" is where global service providers have peering arrangements for the exchange of Internet traffic. The major Internet global service providers are MCI (who also operates NSFNET), SprintLink,

- GTE/BBN Planet (who provides Backbone service to AT&T), ANS/AOL, and AGIS.
- (2) Most "peering" (exchange of email, Web page requests, Web pages, and other message types from users connected to one global service provider to servers connected to a different global service provider) is still done at the NAPs on the continental U.S., even for messages exchanged between two points in Asia
    - b) A local Internet service provider may be many intermediaries removed from a NAP, and the available capacity may be oversold a hundred times. Very few Internet service providers will disclose how many times the total link to the relevant NAP has been oversold.
      - (1) The utility program "traceroute," when run from a non-modem connected PC, reports transmission delays.
  - 2. Less transmission delay between a virtual store and a NAP means faster response, which can mean fewer "abandoned shopping carts" at a Web store and, therefore, higher sales
- B. Component 2: One or more Web and database servers running the following applications (examined in more detail below):
- 1. Catalogs with site maps, searching, and "pages on the fly"
  - 2. Shopping cart with cookies, check-out, tax, and shipping
    - a) For export sales, customs forms and declarations
  - 3. Secure payment
  - 4. Inventory
  - 5. Accounting, and
  - 6. Post-sales support
- C. Component 3: Web site operations
- 1. Ongoing order handling, accounting, customer service
  - 2. Ongoing Web site design
- D. Component 4: Web site maintenance and enhancement
- 1. Keeping Web site operational
    - a) Keeping operating system and software applications working
    - b) Installing software upgrades
    - c) Keeping public parts of Web site repaired
    - d) Keeping private parts of Web site private
    - e) Periodic link and HTML (the language of Web pages) validation
  - 2. Implementing enhancements
- E. Component 5: Optional multimedia extensions
- 1. Audio (clips or streaming)
  - 2. Video (clips or streaming; video streaming requires at least 56 Kbps)
  - 3. Use of new extensions prevents access by some older browsers
- F. Component 6: Payment processing agreements for each payment mechanism
- 1. Credit card (e-card and perhaps physical)
  - 2. Check (e-check and perhaps physical)

3. E-cash
- G. Component 7: Agreements for packaging and shipping products
  1. Web Commerce sites can have their own inventory (usually fast selling merchandise (e.g., <http://www.virtualvineyards.com>), or depend upon distributors' inventory (e.g., <http://necxdirect.necx.com>; NecxDirect depends upon live inventory and order connections to global distributors like Ingram Micro and Merisel)
  2. Major courier services, e.g., Fedex, will host Web Commerce sites and provide shipping
- H. Component 8: Post-sales support
  1. Web-based bulletin boards (can require password)
  2. Frequently asked questions ("FAQ") database
  3. News services (a mini-USENET; can use the NNTP protocol used by USENET)
  4. Online diagnostics
- I. Component 9: Self-hosting vs. third party hosting (physical and virtual)
  1. Self-hosting (your server on your premises with your Internet access)
  2. Third party hosting
    - a) Physical (your server on a third party's premises with shared Internet access)
    - b) Virtual (your Web site on a shared hard drive on a third party's premises with shared Internet access)
- IV. THE HEART OF WEB COMMERCE: WEB CATALOGS WITH A SITE MAP, SEARCHING, AND "PAGES ON THE FLY"
  - A. Design issues ("navigation, navigation, and navigation")
    1. Connection speed and Web server siting
    2. Welcome page and map of Web site
    3. Page templates
      - a) Color scheme
      - b) Static pages
        - (1) What happens when prices or products change?
      - c) Dynamic pages (requires gateway service and database servers)
        - (1) Forms for accounts, surveys, feedback
        - (2) Searching by product, manufacturer, function
          - (a) Exact match
          - (b) Loose match
          - (c) Searching requires a "search engine," such as Excite, AltaVista, etc.
        - (3) Page generation on the fly
          - (a) Traditional "CGI" gateway services; each database interface is a new program instance
          - (b) Newer "API" gateway services; all database interfaces are part of operating system
        - (4) Page template selection based on customer type



- (5) Voice over Internet (Microsoft NetMeeting, Netscape Communicator)
- d) Navigation buttons, menu bars, rulers, and cascading style sheets (new in Internet Explorer 3.0 and Navigator 4.0)
- e) Icon size and color depth (256 colors recommended)
- f) Progressive image display
- g) Clickable maps, icons, and headings
- h) Use of tables and frames
  - (1) "Tables" are like grid-lined tables in a word processing document, but are displayed in a Web browser. Tables help to organize tabular data. Tables within tables are possible.
  - (2) "Frames" are "mini-browsers" within the primary Web browser page. Frames are often used to continuously display a table of contents or index for a site in a portion of the browser page. A Web page can have multiple frames.
- i) Alternate "text only" pages (for non-graphical browsers)
- j) Multilingual issues, e.g., keeping text out of graphics, and building language-specific pages on the fly
- 4. Repurposing a Web catalog as a CD-ROM
- 5. Choice of Web page authoring tools
  - a) Some authoring tools, such as NetObjects Fusion, MS Interdev, and MS Front Page, include Web site management functions.
  - b) Other authoring tools, such as Navigator Gold, HotMetal, and Hot Dog, focus on Web page creation only.
  - c) "Conversion" authoring tools, like MS Internet Assistants for Word, Excel, for Office 95, or the integrated features in Office 97, "save" or "print" an existing document as a Web (HTML) file.
  - d) Like most computer graphics artists, most Web page designers and site managers use a collection of different software
- 6. Site map and/or table of contents (can be in a "frame")
- 7. Special search engine hit page (often the Welcome page, with major key words repeated in the same color as the background, and therefore invisible to humans; higher incidence of key word means higher relevance in most search engines)

## V. SHOPPING CART WITH COOKIES, CHECK-OUT, TAX, AND SHIPPING

- A. All catalog Web sites need shopping cart and check-out functions.
  - 1. Some Web catalog creation software, e.g. ICat, Netscape Merchant System, and MS Merchant Server Catalog, come with shopping cart and check-out functions.
  - 2. Shopping cart and check-out functions can be added to an existing Web sites. ([www.ids.net/~oops/cart/](http://www.ids.net/~oops/cart/) offers a free, basic, shopping cart and cookies system).
  - 3. "Cookies" are small files on the end-user's computer that a Web server can read and write to. Cookies can be used for a variety of things, such as

tracking where a Web site visitor goes during a visit to a Web site. A shopping cart system uses cookies (i) to store the products and quantities a shopper puts in a shopping cart, and (ii) to read the contents of the cookie at check-out time.

4. A shopping cart system should come equipped to calculate and display tax and shipping on orders.

## VI. SECURE PAYMENT AND SECURE ACCESS

### A. Credit card (e-card and perhaps physical)

1. "Do or die" agreement among Microsoft, Netscape, VISA, and MasterCard, who collectively co-developed and are implementing the new Secure Electronic Transaction ("SET") standard. SET uses public key/private key encryption and electronic certificates to emulate the use of physical credit cards.
2. How SET works
  - a) Public key/private key encryption
  - b) To authenticate sender to trading partners, sender uses sender's private key to encrypt messages
    - (1) Recipient uses sender's public key to decrypt message: if the message decrypts, it can only have come from sender
  - c) To shield financial or confidential information, sender uses recipient's public key to encrypt
    - (1) Message can only be decrypted by recipient using recipient's private key
  - d) Public keys are stored by publicly accessible "certificate authority services"
  - e) SET-based orders have different parts encoded with different keys, so seller can decrypt a customer order encoded with seller's public key, and can decrypt authenticity of buyer encrypted with buyer's private key, but merchant cannot decrypt payment data encrypted with credit card issuer's public key; the merchant awaits the issuer's confirmation that payment will be made to the seller in a stated amount
  - f) SET is more secure than physical use of credit cards
    - (1) U.S. Government has now begun to grant "industrial strength" keys (56 bit DES or equivalent) for use in international commerce
    - (2) VeriFone is shipping a comprehensive implementation of SET, which uses "vPOS" at the merchant site and "vGATE" at the acquirer and/or card issuer site. SET, vPOS, and vGATE is included in Microsoft Merchant Server 1.0 and will be included in Netscape Commerce Server Merchant System. In January, 1997, Wells Fargo Bank (California) and MasterCard implemented the first SET-based Web Commerce system.

3. Other credit systems (Open Market, First Virtual)
- B. Check (e-check and perhaps physical)
  1. E-check typically uses Kerberos private key encryption, which is well-established in the UNIX world
- C. E-cash
  1. Can be anonymous or identifiable
  2. Many vendors, e.g., DigiCash, CyberCash
  3. Operates like using a combination of travelers checks and cashiers checks. Consumer buys cash tokens (like travelers checks), which are used for online purchases by telling the bank that sold the cash tokens to issue payment (cashiers check) to a merchant.
  4. E-cash is well-suited for "micro-transactions", that is, small purchases from a few cents to a few dollars. Micro-transactions are important in buying information and in playing online games.
- D. The average direct cost of payment facilitation is:
  1. Cash, 8 cents per payment
  2. Debit card, 30 cents per payment
  3. Credit card, 80 cents per payment
  4. Credit card authorization is available on a fixed fee or fixed percentage basis from "third party processors" or "acquirers"
- E. Secure payment processing services may be provided on the store's Web server, by the hosting party's server, or by third parties specializing in payment services. AT&T Secure-Buy combines virtual hosting and payment services, but uses a proprietary payment system and network. Netcom and Fedex also offer hosting and payment processing services. First Virtual is a third party specializing in payment services.
- F. Security may also be important for "subscription" services
  1. Secure Sockets Layer ("SSL") uses encryption to protect all server / browser communications)
  2. Secure HTTP ("S-HTTP") uses encryption to protect only HTTP communications
  3. SSL and S-HTTP may be used together for double protection
- VII. INVENTORY
  - A. Interactive linkage to detect remaining units and out of stock conditions and to reorder when inventory is below carrying level
  - B. Order tracking and inventory management reporting must be very carefully defined by required data and report frequency if hosting services are used.
- VIII. ACCOUNTING
  - A. Interactive linkage of transaction and payment system with general ledger or subledgers. Great Plains and Peachtree have announced such links.
  - B. Sales reporting must be very carefully defined by required data and report frequency if hosting services are used.
- IX. MARKETING
  - A. Market segmentation

- B. Market research
    - 1. Web site visitor tracking programs ("server statistics")
    - 2. Surveys and questionnaires
  - C. Listings on major search sites (AltaVista, Yahoo, InfoSeek, etc.)
    - 1. Individual registrations
    - 2. Submit-it ([www.submit-it.com](http://www.submit-it.com))
  - D. Sales data analysis
  - E. Value-added sites
    - 1. Press release library
    - 2. Reference pages with links to other sites, esp. product or service evaluations and reviews
    - 3. Searchable reference works, e.g., membership lists, bibliographies
    - 4. Promotions, e.g., e-coupons, trade-ins, rebates
    - 5. Collateral information, e.g., recipes from a food store, walking tours from a travel agency
- X. THE PRIVATE (PASSWORD PROTECTED) PORTION OF A MANUFACTURER'S OR MERCHANT'S WEB SITE
- A. Enhanced security using the "Layer 2 Tunneling Protocol" – an "L2TP" private line "tunneled" through the Internet creates a Virtual Private Network, which can replace proprietary Value Added Networks
    - 1. Convergence: Major EDI VANs have begun to offer Web site hosting and Web-based communications software to meet the challenge of Web Commerce software publishers, who are entering the EDI market through Extranet technology to meet the challenge of Web Commerce software publishers, who are entering the EDI market through Extranet technology
  - B. An "Extranet" is the enablement of commercial transactions among Intranets; an Extranet permits your suppliers and trading partners behind your exterior, "minor" firewall to check inventory, schedules, etc. (always have a second, major firewall if you use an Extranet)
  - C. Enhanced support of sales and marketing personnel and agents, globally: email, price lists, training, products in development, custom orders, product/market strategy, collaborative computing (including desktop videoconferencing)
- XI. CASE STUDY: TRAVEL INDUSTRY WEB COMMERCE
- A. Traditional approaches (e.g., [www.travelocity.com](http://www.travelocity.com), [www.ten-io.com](http://www.ten-io.com))
  - B. Web auction systems for travel ([www.air-fare.com](http://www.air-fare.com))
  - C. Business market enhancements
    - 1. Web catalog-based meeting planning
    - 2. Destination information systems for business travelers
  - D. Leisure market enhancements
    - 1. Web catalog-based FIT planning
    - 2. Web catalog-based GIT planning
    - 3. Destination information systems for leisure travelers
  - E. Tour wholesaling
    - 1. On-line, multimedia tariffs (tour packagers' catalogs of tours and prices)

- 2. Travel agents as tour packagers
- F. Ground service supplier reservation systems, esp. day tours, small properties, and shopping related travel
- G. Intranets and Extranets for travel industry companies
- XII. NEAR-TERM WEB / INTERNET DEVELOPMENTS
  - A. "Channel" or "Push" multicasting, e.g., Pointcast, BackWeb, MS Channel Definition Format. Channels can be used for automatic, global document or software distribution. Manufacturers can use Internet channels for remote diagnostics of equipment, to upgrade software installed on equipment, and to distribute "distance learning" materials.
  - B. 56 Kbps (inbound) modems (conflicting standards have delayed adoption)
  - C. Handheld Windows PCs with wireless Internet access
  - D. Set-top boxes from cable television system operators
  - E. Asynchronous digital subscriber lines from local exchange carriers
  - F. Interoperation between the DCOM and CORBA methodologies for brokering objects over the Internet
- XIII. FUTURE WEB / INTERNET DEVELOPMENTS
  - A. Bandwidth reservation for voice and videoconferencing
  - B. Replacement of TCP/IP over Frame Relay trunking by ATM over SONET/SDH, for even faster response times
    - 1. Higher resolution graphics, esp. 3D graphics and virtual reality (with multichannel audio)
    - 2. Interactive selling by videoconferencing, esp. video kiosks
    - 3. Faster catalog browsing
  - C. Better predictive marketing based on buying habits
  - D. Shopping agents, network-based programs that comparison shop and even negotiate terms and price
  - E. Information agents, esp. information about product problems and maintenance requirements
- XIV. THE CONTRACTUAL ENVIRONMENT OF WEB COMMERCE
  - A. Web site design and development agreements
    - 1. Licenses of graphics and server software
    - 2. Assignments of custom software
  - B. Web site hosting and maintenance agreements
  - C. Intellectual Property Rights
    - 1. Ownership and use of software, trademarks, service marks, patents, etc.
    - 2. Ownership and use of marketing and technical data
  - D. Payments processing agreements
  - E. Extranet agreements
  - F. Order fulfillment agreements (including warehousing, packaging, customs declarations and duties, shipment, and order tracking)
  - G. Related "electronic distribution" agreements (technical support, remote diagnostics, software upgrade distribution)
- XV. SUMMARY: USING WEB COMMERCE TO GAIN COMPETITIVE ADVANTAGE

- A. Reach global markets at historically low costs
- B. Lower the cost of prospecting and lead development
- C. Provide information based "selling tools" to enable a more effective sales force, collaboration among supply and trading partners, and sales of higher margin products
- D. Reduce print and broadcast media advertising costs
- E. Let the customer do more of the pre-sales work
- F. Improve customer service and customer input into product development and trials
- G. Leverage existing, or improve the Return on Investment of pending, investments in computers and Intranets
- H. Enable "smart products" required to remain competitive



## INTERNATIONAL WEB COMMERCE AND INTELLECTUAL PROPERTY RIGHTS

George E. Darby

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If an exported product or service is based on a particular technology, method, or design, or if a brand name is used to identify an exported product or service, an Intellectual Property Rights plan should be part of the overall export strategy. Intellectual Property Rights are the rights granted under patent, trademark, copyright, and trade secret law. These rights are not uniform in all countries, and there have been significant changes in Intellectual Property Rights under the Trade Related Aspects of Intellectual Property Rights Objectives ("TRIPS") portion of the GATT Uruguay Round Agreement. As of January 1, 1996, GATT became the World Trade Organization ("WTO"). WTO/TRIPS covers standards of: protection for patents, trademarks, copyrights, and trade secrets; enforcement of Intellectual Property Rights; and dispute settlement procedures. This is a brief summary of International Trade and Intellectual Property Rights, and legal counsel should be obtained for assistance with specific matters.

A **patent** is a grant of certain "monopoly rights" by a government to an inventor. The inventor may assign his or her patent to another owner. A patent owner has the right to exclude others from making, using, and selling the patented invention for a set period of time. In the United States, patents are valid for 20 years from the filing date of the patent application. Patents are granted in the U.S. for machines, compositions of matter, articles of manufacture, methods, and improvements thereon, that are novel (new), useful, and unobvious. Describing an invention in a publication, offering the invention for sale, or putting the invention into public use more than one year before the filing date of the relevant patent application can bar the issuance of a patent for the invention. Patents are issued on a country by country basis, and U.S. patents are not automatically recognized and protected in foreign countries. International treaties and conventions help to simplify the filing of related patent applications in multiple countries. WTO/TRIPS resolved long-standing international issues surrounding patent rights, including recognition of protection for pharmaceutical and agricultural chemical patents, and prohibition of compulsory licensing regimes that apply to only certain fields of technology.

A **trademark** is a word, phrase, symbol or design that identifies and distinguishes the source of the goods or services of one party from those of other parties. A service mark identifies and distinguishes the source of a service rather than a product. Trademark and service marks (collectively, "marks") can be registered under state and U.S. federal law, and under the laws of many foreign countries, but not all nations provide statutory protection of marks. Marks can be registered in many countries without actual use of the mark, so your export strategy can include securing registration in the U.S. and foreign nations of planned marks before launching the use of such marks. WTO/TRIPS introduced important improvements in the international protection and

use of marks, such as enhancing the protection of well-known marks, and prohibiting the compulsory licensing of marks.

A **copyright** protects an original work of authorship (the expression of an idea, but not the idea itself) from the moment the work is "fixed in a tangible medium of expression." A copyright grants to the author control over the copying, sale/distribution, derivative use, public performance, and public display of the work. A copyright can protect computer programs, documentation, architectural works, audiovisual works, and many other works of authorship important in international trade. Works created in the U.S. on or after January 1, 1978, are automatically protected by a U.S. copyright from the moment of creation. The country of first publication of a work is important in determining its copyright status.

A **trade secret** is "any formula, pattern, device, or compilation of information which is used in one's business, and which gives opportunity to obtain an advantage over competitors who do not know or use it." Unlike patents, copyrights, and trademarks, the protection of trade secrets relies on company contracts and internal policies, not on registration of the trade secrets with a government agency. Once a trade secret becomes public, it loses forever its status as a trade secret. "Technology transfer" is often a component of capital goods exports, and usually includes the disclosure of trade secrets to the importing customer. Although there are substantial penalties for misappropriation of trade secrets under U.S. federal and state laws, protection of trade secrets in other countries can be very weak. Protection of trade secrets in international trade, therefore, relies on the creation and enforcement of corporate security policies, and on confidentiality clauses in consulting, licensing, employment, marketing, and joint venture agreements. WTO/TRIPS requires that persons to whom trade secrets are properly disclosed abide by "honest commercial practices"; protection of trade secrets by contractual provisions remains very important international trade.

**GEORGE E. DARBY****[darbylaw@teleport-asia.com](mailto:darbylaw@teleport-asia.com)**

Voice: +1/808/626-1300 Fax: +1/808/626-1450

Mr. Darby practices technology law, the provision of legal counsel to technology businesses. His legal practice includes software development, telecommunications, and computer services agreements; financing; protection of intellectual property; joint ventures; licensing; and leasing. Mr. Darby is also of counsel to a patent, trademark, and technology law firm in Greenville, S.C., and is president of an information systems consultancy that provides strategic planning concerning information technology, Web commerce, business process redesign, intellectual property, and marketing in Asia.

Mr. Darby has produced several pioneering technology events as part of PTC activities, such as the first ever fully interactive three-node digital international videoconference (Hong Kong, Honolulu, and Washington, D.C.) in 1987, and the first ever use over VSAT (a thin-route satellite communications technology) of interactive multimedia databases, airline reservations systems, and desktop videoconferencing in 1994.

**Education:**

J.D., Richardson School of Law, University of Hawaii at Manoa

M.B.A., Finance Concentration, University of Hawaii at Manoa

Post-graduate Certificate, International Banking and Finance

Post-graduate Certificate, International Marketing Management

Graduate Study, Harvard University

B.A., (Molecular) Biology/Pre-Med, Johns Hopkins University

Languages: Japanese, German, French

### ***Towards the New Age of Digital Economy***

- Development of Electronic Commerce and  
A Policy Framework -

June 4th, 1997

Hisashi YOSHIKAWA  
Machinery & Information Industries Bureau  
Ministry of International Trade & Industry, Japan

### **2 Change in Japanese economy through EC**

The Key to economic reform is Electronic Commerce -  
the economic activity and daily living through the  
exchange of digital information using IT and networks.



1. The achievement of economic structural reform
2. The increase in employment through the creation of  
new industrial fields

2

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### **3 Types of Electronic Commerce**

#### ***Electronic Commerce***

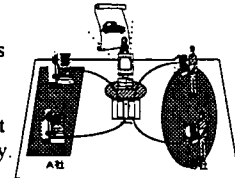
- electronic exchange of data and information  
among corporations  
➡ EDI, CALS etc.
- electronic commercial transaction between  
companies and consumers  
➡ Virtual malls, IC cards etc.

3

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### **4 Example: Automotive Industry**

- Design and other data can be  
exchanged on computer networks  
(e.g. collaborative design).
- Operations can be undertaken at  
various locations simultaneously.



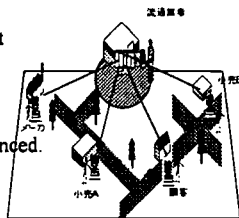
- Changes in corporate relationships such as between  
parent companies and supporting SMEs.
- Elimination of limitation imposed by company location

4

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### **5 Example: Textile and distribution industries**

- Unified real-time management  
of sales and customer data
- Inventory risk lowered;  
efficiency of distribution enhanced.



- reduced stock time by 35%
- reduced the rate of overstocking from 12% to 5%

5

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### **6 Prospective Electronic Commerce Market**

#### **Business to consumer EC market in the world**

	1994	2000	2005
all retail sales	2.4	4.3	6.5
online sales	0	0.6	1.65
rates of online sales	0%	14%	19.2%

(unit : trillion \$)

(source: Killen & Associate, Inc.)

In Japan, rates of online sales is expected to grow  
to approximately 5% in the year 2005, and  
EC market will increase to about \$10 billion.

6

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## MITI's Measures for Promoting Electronic Commerce and A Policy Framework

7

### 8 MITI pilot projects in electronic commerce

Support for R&D projects since fiscal 1995

- Business to business electronic commerce
  - CALS-related
  - EDI-related
  - other projects
- Business to consumers electronic commerce
- R&D of technological platform for electronic commerce
- Promotion and training for electronic commerce, particularly for SMEs

8

### 9 Business to business EC (1)

Data interchange of blueprints etc. in design, production, and other processes/Joint projects (CALS-related)

- Electric power
- Automobiles
- Space: Satellite construction
- Steel
- Construction (in collaboration with Ministry of Construction)
- Aircraft (in collaboration with Defense Agency)
- Electronic equipment & components
- Plant
- Software
- Shipbuilding (in collaboration with Ministry of Transport)

9

### 10 Business to business EC (2)

Projects involving building of common data bases and advanced data-interchange (EDI-related)

- Petrochemicals
- Textiles
- Toys
- Travel (in collaboration with Ministry of Transport)
- Distribution
- Electric cables
- Stationery
- Construction materials (in collaboration with Ministry of Construction)
- Furniture
- Medical care (in collaboration with Ministry of Health and Welfare)
- Publishing
- Advertising

10

### 11 Business to consumer EC, and other projects

EC projects between companies and consumers

- Credit, distribution sectors, etc.
- ( Total of 19 projects )

Other projects

- Electronic notarization
- Study of business processes

11

### 12

ECom

## Electronic Commerce Promotion Council of Japan (ECOM)

#### Objective:

To form a technological and institutional common platform for electronic commerce

#### Member :

229 Companies/Organizations including foreign affiliates (as of 1996.12.10)

12

A new policy framework for  
*the era of digital economy* with  
a wide spread of electronic commerce

13

#### 14 Towards the new age of electronic commerce

##### Five principles

- I Constructive efforts and swift responses to change
- II Resolution of problems through technology and the marketplace
- III Security and Trust
- IV Universal access  
- *Assuring equal opportunity to SMEs etc.*
- V International coordination

14

#### 15 First principle:

##### Constructive Efforts and Swift Responses to Change

Governments should:

- address the economic change brought by electronic commerce positively and actively,

as well as

- flexibly recognize the superiority of advanced technologies,
- utilize them to the greatest extent possible, and
- avoid falling behind the speed of technological progress.

15

#### 16 Second principle:

##### Resolution of Problems through Technology and the Marketplace

Governments should:

- not immediately introduce undue regulations,

but

- respond through technology and market competition,

as well as

- recognize that voluntary new digital business practices will be created in the private sector.

16

#### 17 Third principle:

##### Security and Trust

To ensure the sound, stable and reliable environment for the digital economy,

Governments should tackle:

- the existing legal and institutional issues on electronic commerce such as:

- security, privacy, and IPRs

as well as

- new economic and social issues including:
- content and consumer protection etc.

17

#### 18 Fourth principle:

##### Universal Access

- assuring equal opportunity to SMEs

In the digital economy, the effective use of IT will bring about a dramatic increase in the possibilities for the activities of SMEs and regional industries.

Governments should create an environment in which SMEs and individuals are assured of equal access to electronic commerce.

18

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19 Fifth principle:

## International Coordination

Governments should:

- recognize the global nature of the digital economy, and
- make an efforts to ensure close information exchanges and policy coordination with other countries.

19

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20 Towards the new age of electronic commerce

## Policy issues

- Building an international framework
- Formulating rules for commercial transactions
- Creating a new system for protecting IPRs
- Ensuring security
- Protecting personal data and privacy
- Dealing with illegal and harmful content

20

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21 Towards the new age of electronic commerce

## Policy issues (continued)

- Addressing consumer-related issues
- Supporting the efforts of SMEs
- Nurturing and educating human resources
- Assuring interoperability
- Addressing other institutional issues  
- financial issues, tax and customs issues etc.

21

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22 Conclusion

MITI made public a draft report on a comprehensive policy framework for electronic commerce incorporating policy principle, issues to be achieved, and invite public comments.

A draft report,  
*"Towards the Age of Digital Economy"*  
 which was issued in May 1st, 1997

Please refer to the Web page at: <http://www.miti.go.jp>

22

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グローバル・ネットワーク・ソサエティ：事業機会と挑戦

Global Network Society : Business Opportunities and Challenges

情報通信月間参加行事

主催：PTC日本委員会、PTC

後援：郵政省、通商産業省、横浜市、日本経済新聞社

協賛：情報通信月間推進協議会、国際コミュニケーション基金

The event for INFO-COMMUNICATIONS PROMOTION month

Hosted by : PTC Japan Committee, PTC

Supported by : Ministry of Posts and Telecommunications, Ministry of International Trade and Industry,  
NIHON KEIZAI SHIMBUN, Inc.

Co-sponsored by : The Council of INFO-COMMUNICATIONS PROMOTION MONTH,  
International Communications Foundation

PTC 1997  
**Mid Year Seminar**  
June 2 - 4, 1997 Yokohama, Japan

# PTC 1997 年央セミナープログラム

## "グローバル・ネットワーク・ソサエティ：事業機会と挑戦"

	6/2 (月)	6/3 (火)	6/4 (水)
9:00		9:00~18:00 セミナー受付	9:00~14:00 セミナー受付
10:00		<p>10:00~10:45 開会の辞 司会：横川 日裕 PTC 副理事長 小山 森也 PTC 日本委員会 委員長 野田 聖子 郵政政務次官 高秀 秀信 横浜市長 ジェーン・ハード PTC 理事長</p> <p>10:45~12:00 基調講演 司会：小関 康雄 PTC 名誉会長 ●長谷川 憲正 郵政省 大臣官房国際部長 「グローバル情報社会の発展と政策」 ●アンソニー・ルトコウスキー ジェネラル・マジック 副社長 「グローバル通信ネットワークの将来」</p>	<p>9:30~12:30 セッション2 "プラットフォームと関連機器" 司会：鶴田 清治 PTC 名誉会長 ●吉川 英一 NEC 常務取締役 ○マルチメディアネットワークのプラットフォームと関連機器及びその応用 ●持田 侑宏 富士通研究所 取締役 ○アクセスネットワークにおけるプラットフォームと関連機器 ●吉川 重夫 NHK放送技術研究所 研究主幹 「将来の家庭用大型平面ディスプレイ」</p>
11:00		小ホール (5F)	<p>11:00~11:15 休憩</p> <p>●沢田 智明 日本IBM ネットワークコンピューティング 事業推進NC計画 部長 「ネットワークコンピューティング・プラットフォーム」 ●安達 徹 NTT通信網総合研究所 主幹研究員 「マルチメディア時代のネットワークサービス」</p>
12:00		12:00~13:30 昼食	小ホール 5F
13:00		バシフィック (3F)	12:30~14:00 昼食
14:00	14:00~18:00 セミナー受付	<p>13:30~17:00 セッション1 "電気通信インフラストラクチャー" 司会：公文 俊平 GLOCOM 所長 ●宮脇 隆 NTT 副社長 NTTの国際事業戦略 ●太田 亨 KDD 副社長 「アジア太平洋地域を中心としたKDDビジネスの将来戦略」 ●睦 植来 SKテレコム 副社長 「韓国における無線通信：自由競争時代の新戦略」</p>	<p>14:00~17:30 セッション3 "コンテンツとアプリケーション" 司会：小高 康邦 PTC 名誉会長 ●長屋 龍人 NHK放送文化研究所 研究主幹 「デジタル放送時代におけるISTV (Integrated Services TV)」 ●カール・ロシータ テレビジョン・ニュージーランド 「融合時代の新アプリケーション」 ●中川 一史 横浜市 教育委員会事務局情報教育課 「マルチメディア教育」</p>
15:00		15:00~15:15 休憩	15:30~16:00 休憩
16:00		<p>●リー・ダニエルズ 日本AT&amp;T 社長 ○米国におけるユーザーの要望と産業界の対応 ●永目 賢助 トヨタ自動車 システム企画部副部長 ○通信事業者に対する要望 ●西脇 文男 日本興業銀行 システム管理部長 ○バンキング・ネットワーク・システムの動向と情報通信事業者への期待</p>	<p>●ジョージ・ダービー ジョージ・ダービー法律事務所 ○ウェブコマース・ビジネスと法的課題 ●芳川 恒志 通産省 機械情報産業局情報政策企画室長 ○デジタル経済の時代に向けて ●安藤 隆年 ソフピアジャパン 副理事長 ○岐阜県ソフピア・プロジェクト</p>
17:00		小ホール (5F)	<p>17:35~17:45 閉会の辞 司会：横川 日裕 PTC 副理事長 ●ダン・ウェドマイヤー PTC 副理事長</p>
18:00	18:00~20:30 PTC日本委員会主催 オープニング・パーティー	18:00~20:00 横浜市長 歓迎レセプション	小ホール (5F)
19:00		162 501・502 (5F)	

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# PTC 1997 Mid Year Seminar Program

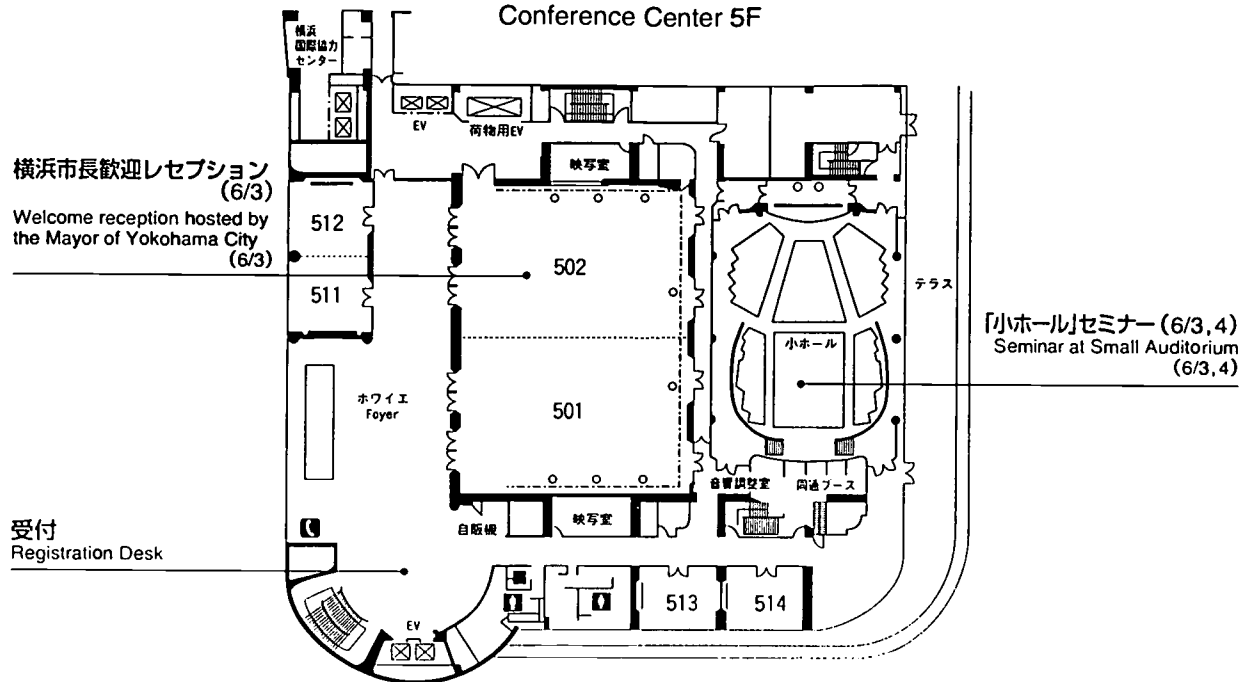
"Global Network Society : Business Opportunities and Challenges"

	6/2 (MON)	6/3 (TUE)	6/4 (WED)
9 : 00		9 : 00~18 : 00 Seminar registration	9 : 00~14 : 00 Seminar registration
10 : 00		<b>10 : 00~10 : 45</b> <b>Opening Remarks</b> chaired by Hiroyoshi Yokogawa, Vice President of PTC <ul style="list-style-type: none"> <li>•Moriya Koyama Chairman, PTC Japan Committee</li> <li>•Seiko Noda State Secretary for MPT</li> <li>•Hidenobu Takahide The Mayor of Yokohama</li> <li>•Jane N. Hurd President of PTC</li> </ul>	<b>9 : 30~12 : 30</b> <b>Session 2</b> <b>"Platform and Equipment"</b> chaired by Kiyoharu Tsuruta, Chairman Emeritus of PTC <ul style="list-style-type: none"> <li>•Eiichi Yoshikawa Senior Vice President, NEC <i>Platform and equipment for multi-media network and its applications</i></li> <li>•Yukou Mochida Member of the Board Fujitsu Laboratories <i>Platform and equipment for access network</i></li> <li>•Shigeo Yoshikawa Exec. Research Engineer, Science &amp; Technical Research Lab, NHK <i>Future large - area flat panel display for house use</i></li> </ul>
11 : 00		<b>10 : 45~12 : 00</b> <b>Keynote Speeches</b> chaired by Yasuo Koseki, Chairman Emeritus of PTC <ul style="list-style-type: none"> <li>•Norimasa Hasegawa Director-General, International Affairs Department, MPT <i>Development and policy for global information society</i></li> <li>•Anthony Rutkowski Vice President, General Magic <i>Future global communications network</i></li> </ul> Small Auditorium 5F	<b>11 : 00~11 : 15 Break</b> <ul style="list-style-type: none"> <li>•Tomoaki Sawada Director, Strategy and Plan, Network Computing, IBM Japan <i>Network computing platform</i></li> <li>•Toru Adachi Director, Telecommunication Network Lab, NTT <i>Network services in multimedia era</i></li> </ul> Small Auditorium 5F
12 : 00		<b>12 : 00~13 : 30 Lunch</b>	<b>12 : 30~14 : 00 Lunch</b>
13 : 00		Pacific 3F	Pacific 3F
14 : 00	14 : 00~18 : 00 Seminar registration	<b>13 : 30~17 : 00</b> <b>Session 1</b> <b>"Telecommunications Infrastructure"</b> chaired by Shumpei Kumon, Executive Director, GLOCOM <ul style="list-style-type: none"> <li>•Noboru Miyawaki Senior Executive Vice President, NTT <i>NTT's overseas business strategy</i></li> <li>•Tohru Ohta Executive Vice President, KDD <i>KDD's Future strategy, clicking on the Asia-Pacific region</i></li> <li>•Jung L. Mok Senior Executive Vice President, SK Telecom <i>Wireless communication in Korea - the new strategy under competition and open-door policy</i></li> </ul>	<b>14 : 00~17 : 30</b> <b>Session 3</b> <b>"Contents and Applications"</b> chaired by Yasukuni Kotaka, Chairman Emeritus of PTC <ul style="list-style-type: none"> <li>•Tatsuhito Nagaya Exec. Researcher, Broadcasting Culture Research Inst., NHK <i>ISTV will open a variety of contents and applications in digital broadcasting</i></li> <li>•Karl Rossiter Television New Zealand <i>New applications in convergence era</i></li> <li>•Hitoshi Nakagawa City of Yokohama <i>Multimedia education</i></li> </ul>
15 : 00		<b>15 : 00~15 : 15 Break</b>	<b>15 : 30~16 : 00 Break</b>
16 : 00		<ul style="list-style-type: none"> <li>•Lee A. Daniels President and CEO, AT&amp;T Japan <i>US user requirements and industry implications</i></li> <li>•Kensuke Nagame TOYOTA <i>Requirements of telecom carriers</i></li> <li>•Fumio Nishiwaki General Mgr., Systems Department, IBJ <i>Banking network systems and expectations to telecom carriers</i></li> </ul> Small Auditorium (5F)	<ul style="list-style-type: none"> <li>•George E. Darby Law offices of George E. Darby <i>Business and law of web commerce</i></li> <li>•Hisashi Yoshikawa Director, MITI <i>Towards the new age of digital economy - Development of electronic commerce and a policy framework -</i></li> <li>•Takatoshi Ando Vice Chairman, Softopia Japan <i>Softopia project of Gifu prefecture</i></li> </ul>
17 : 00			<b>17 : 35~17 : 45</b> <b>Closing Remarks</b> chaired by Hiroyoshi Yokogawa, Vice President of PTC <ul style="list-style-type: none"> <li>•Dan Wedemeyer Vice President of PTC</li> </ul> Small Auditorium (5F)
18 : 00	18:00~20:30 Opening reception hosted by PTC Japan Committee	18 : 00~20 : 00 Welcome reception hosted by the Mayor of Yokohama City	
19 : 00		163 501-502 (5F)	

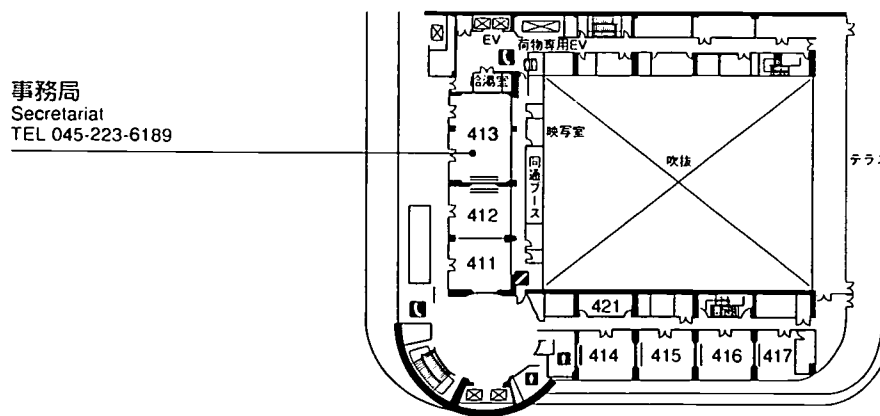
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# 会場案内図 Floor Plan

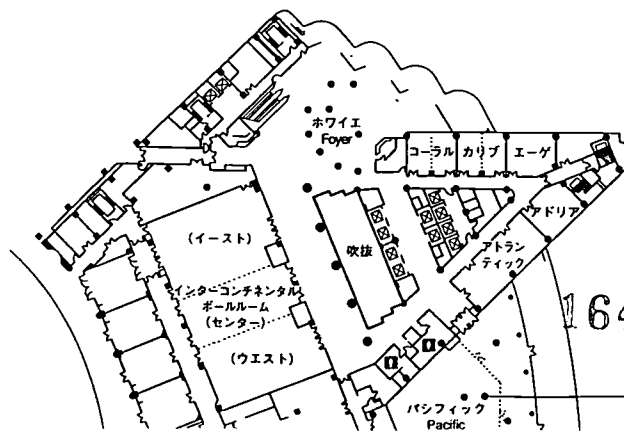
## 会議センター 5F Conference Center 5F



## 会議センター 4F Conference Center 4F



## ヨコハマグランド・インターコンチネンタルホテル 3F Yokohama Grand・Intercontinental Hotel 3F



昼食 (6/3, 4)  
LUNCH (6/3, 4)  
PTC日本委員会主催  
オープニング・パーティー (6/2)  
Opening reception hosted by  
PTC Japan Committee (6/2)

## PTC 1997 Mid Year Seminar Hosting Members

### PTC Japan Committee

#### Ministry of Posts & Telecommunications

Itochu Corporation  
Oki Electric Industry Co., Ltd.  
KDD Submarine Cable Systems Inc.  
Kokusai Electric Co., Ltd.  
Kokusai Denshin Denwa Co., Ltd.  
Research Institute of Telecommunications Policies  
& Economies  
Sumitomo Corporation  
Sumitomo Electric Industries, Ltd.  
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Toshiba Corporation  
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NEC Corporation  
Nippon Telegraph and Telephone Corporation  
Japan Radio Co., Ltd.  
Hitachi, Ltd.  
Fujitsu Limited  
The Furukawa Electric Co., Ltd.  
Matsushita Communication Industrial Co., Ltd.  
Mitsubishi Corporation  
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Yazaki Corporation  
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Japan Approval Institute for Telecommunication  
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NHK (Japan Broadcasting Corporation)  
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